IRREDUCIBLE REPRESENTATIONS OF SMALL ABSTRACT GROUPS COMPUTED WITH GAP

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Abstract. This is a table of all irreducible matrix representations of all 181 groups up to order 40, generated with the GAP software.

1. Construction

The GAP function `IrreducibleRepresentationsDixon` generates irreducible representations of finite abstract groups [4, 3, 7, 1]. The skeleton of the GAP source code looks as follows:

```
#!/usr/bin/env gap

LoadPackage("SONATA") ;;
LoadPackage("ctbllib") ;;

irrforgroup := function(g)
        local els,e,gid,fna,ir,irr,id ;

        Print("---------------\n") ;
        els := Elements(g) ;;
        gid :=  IdGroup(g) ;;
        Print(gid,"\n") ;

        # print elements by generators
        id := 1 ;;
        for e in els do
                if id > 1 then
                        Print(id,"=",els[id],". ") ;
                fi;
                id := id+1 ;
        od;
        Print("\n") ;

        Print(StructureDescription(g),"\n") ;

        ir := IrrDixonSchneider(g) ;;
        Print(ir) ;
        Display(CharacterTable(g)) ;

        Irr(g) ;;
        irr := IrreducibleRepresentationsDixon(g) ;;
        Print(irr,"\n") ;
```

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```
end;;

# need to start at n=2 because n=1 hangs up the IrreducibleRepresetations(g) part
for n in [2..36] do
        alls := AllSmallGroups(n) ;
        for g in alls do
                irrforgroup(g) ;
        od ;
od;
```

2. Results

2.1. **Notations.** We denote the k-th group of order o by $G_o^{(k)}$ enumerating the groups as within GAP. This aligns the following contents with my representations of the cycle graphs [6].

g_j are the group elements, where g_1 is the unit element. The generators are the elements g_2 (and g_3 etc. if more generators are needed). The irreducible representations are only provided for the generators here because the others are obtained by multiplying their representations. The degrees of the representations divide the group order [5].

The representations are denoted by R_r where r runs from 1 up to the number of classes in $G_o^{(k)}$. The trivial representations R_1, where $R_1(g_j) = 1$ or the equivalent higher order unit matrix, are not listed explicitly.

$e_n \equiv e^{2\pi i/n}$ are complex numbers which equal the principal values of roots of unity:

$$e_n = e^{2\pi i/n}; \quad c_{p/q} \equiv \cos(p\pi/q); \quad s_{p/q} \equiv \sin(p\pi/q). \tag{1}$$

$e_4 = i$ is the imaginary unit. $\Re$ and $\Im$ are the real and imaginary parts of their arguments. The symbols

$$\lambda \equiv \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}, \quad \phi \equiv \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}, \quad \epsilon \equiv \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \quad \kappa \equiv \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix},$$

are used for some frequently used 2×2 matrices [2]. $\varphi = (1 + \sqrt{5})/2$ is the golden ratio. Other constants α_o are defined in the text if the matrices would not fit in the lines otherwise; their (first) sub-indices are the order of the group.

2.2. **Order 2.** $G_2^{(1)}$

$$R_2(g_2) = -1.$$

2.3. **Order 3.** $G_3^{(1)}$

$$R_2(g_2) = e_3.$$
$$R_3(g_2) = e_3^*.$$

2.4. **Order 4.** $G_4^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = i. \quad R_3(g_3) = -1.$$
$$R_4(g_2) = -i. \quad R_4(g_3) = -1.$$

$G_4^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = 1. \quad R_3(g_3) = -1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = -1.$$

2.5. **Order 5.** $G_5^{(1)}$

$$R_j(g_2) = e_5^{j-1}, \quad j = 1 \dots 5.$$

2.6. **Order 6.** $G_6^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_6^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_3^2.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_3.$$
$$R_5(g_2) = 1. \quad R_5(g_3) = e_3^2.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = e_3.$$

2.7. **Order 7.** $G_7^{(1)}$

$$R_j(g_2) = e_7^{j-1}, \quad j = 1 \dots, 7.$$

2.8. **Order 8.** $G_8^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = -e_8. \quad R_5(g_3) = i. \quad R_5(g_4) = -1.$$
$$R_6(g_2) = -e_8^3. \quad R_6(g_3) = -i. \quad R_6(g_4) = -1.$$
$$R_7(g_2) = e_8^3. \quad R_7(g_3) = -i. \quad R_7(g_4) = -1.$$
$$R_8(g_2) = e_8. \quad R_8(g_3) = i. \quad R_8(g_4) = -1.$$

$G_8^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = -1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = -1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1.$$

$G_8^{(3)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = \lambda. \quad R_5(g_3) = \phi. \quad R_5(g_4) = -\epsilon.$$

$G_8^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = i\lambda. \quad R_5(g_3) = \kappa. \quad R_5(g_4) = -\epsilon.$$

$G_8^{(5)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1.$$

2.9. **Order 9.** $G_9^{(1)}$

$$R_2(g_2) = e_3. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = e_3^2. \quad R_3(g_3) = 1.$$
$$R_4(g_2) = -e_9^4 - e_9^7. \quad R_4(g_3) = e_3.$$
$$R_5(g_2) = e_9^4. \quad R_5(g_3) = e_3.$$
$$R_6(g_2) = e_9^7. \quad R_6(g_3) = e_3.$$
$$R_7(g_2) = e_9^2. \quad R_7(g_3) = e_3^2.$$
$$R_8(g_2) = e_9^5. \quad R_8(g_3) = e_3^2.$$
$$R_9(g_2) = -e_9^2 - e_9^5. \quad R_9(g_3) = e_3^2.$$

$G_9^{(2)}$

$$R_2(g_2) = e_3. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = e_3^2. \quad R_3(g_3) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = e_3.$$
$$R_5(g_2) = e_3. \quad R_5(g_3) = e_3.$$
$$R_6(g_2) = e_3^2. \quad R_6(g_3) = e_3.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = e_3^2.$$
$$R_8(g_2) = e_3. \quad R_8(g_3) = e_3^2.$$
$$R_9(g_2) = e_3^2. \quad R_9(g_3) = e_3^2.$$

2.10. **Order 10.** $G_{10}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = \begin{pmatrix} \varphi & -1 \\ -\varphi & -\varphi \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & \varphi \end{pmatrix}.$$
$$R_4(g_2) = \phi. \quad R_4(g_3) = \begin{pmatrix} -\varphi & -\varphi \\ \varphi & -1 \end{pmatrix}.$$

$G_{10}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_5^4.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_5^3.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = e_5^2.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = e_5.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = e_5^4.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = e_5^3.$$
$$R_9(g_2) = 1. \quad R_9(g_3) = e_5^2.$$
$$R_{10}(g_2) = 1. \quad R_{10}(g_3) = e_5.$$

2.11. **Order 11.** $G_{11}^{(1)}$

$$R_j(g_2) = e_{11}^{j-1}, \quad j = 1 \ldots, 11.$$

2.12. **Order 12.** $G_{12}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = \begin{pmatrix} -i & 1 \\ 0 & i \end{pmatrix}. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \begin{pmatrix} 0 & i \\ i & -1 \end{pmatrix}.$$
$$R_6(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_6(g_3) = \epsilon. \quad R_6(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_{12}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_3^2. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_3. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = 1. \quad R_5(g_3) = e_3^2. \quad R_5(g_4) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = e_3. \quad R_6(g_4) = 1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = -1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1.$$
$$R_9(g_2) = -i. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = -1.$$
$$R_{10}(g_2) = -i. \quad R_{10}(g_3) = e_3. \quad R_{10}(g_4) = -1.$$
$$R_{11}(g_2) = i. \quad R_{11}(g_3) = e_3^2. \quad R_{11}(g_4) = -1.$$
$$R_{12}(g_2) = i. \quad R_{12}(g_3) = e_3. \quad R_{12}(g_4) = -1.$$

$G_{12}^{(3)}$

$$R_2(g_2) = e_3^2. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = e_3. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$

$$R_4(g_2) = \begin{pmatrix} 1 & 0 & 0 \\ -1 & -1 & -1 \\ 0 & 1 & 0 \end{pmatrix}. \quad R_4(g_3) = \begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ -1 & -1 & -1 \end{pmatrix}. \quad R_4(g_4) = \begin{pmatrix} -1 & -1 & -1 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{pmatrix}.$$

$G_{12}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$

$$R_5(g_2) = \phi. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_6(g_3) = \epsilon. \quad R_6(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_{12}^{(5)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_3^2.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_3.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = 1. \quad R_7(g_4) = e_3^2.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = 1. \quad R_8(g_4) = e_3.$$

$$R_9(g_2) = 1. \quad R_9(g_3) = -1. \quad R_9(g_4) = e_3^2.$$

$$R_{10}(g_2) = 1. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = e_3.$$

$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_3^2.$$

$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3.$$

2.13. **Order 13.** $G_{13}^{(1)}$

$$R_j(g_2) = e_{13}^{j-1}, \quad j = 1 \ldots, 13.$$

2.14. **Order 14.** $G_{14}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = \begin{pmatrix} 2(c_{1/7} - c_{2/7}) & -2c_{2/7} \\ 2(c_{2/7} - c_{1/7}) & 2(c_{2/7} - c_{1/7}) \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & 2c_{2/7} \end{pmatrix}.$$

$$R_4(g_2) = \begin{pmatrix} -2(c_{1/7} + c_{3/7}) & -2(c_{1/7} + c_{3/7}) \\ 2c_{1/7} & 2(c_{1/7} + c_{3/7}) \end{pmatrix}.$$

$$R_4(g_3) = \begin{pmatrix} -2(c_{1/7} + c_{3/7}) & -2(c_{1/7} + c_{3/7}) \\ 2(c_{1/7} + c_{3/7}) & 2c_{1/7} \end{pmatrix}.$$

$$R_5(g_2) = \begin{pmatrix} -2\Re e_{14}^3 & -1 \\ 1 - 2\Re e_{14} & 2\Re e_{14}^3 \end{pmatrix}. \quad R_5(g_3) = \begin{pmatrix} 1 - 2\Re e_{14} & 2\Re e_{14}^3 \\ -2\Re e_{14}^3 & -1 \end{pmatrix}.$$

$G_{14}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = e_7^6.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = e_7^5.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = e_7^4.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = e_7^3.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = e_7^2.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = e_7.$$

$$R_9(g_2) = 1. \quad R_9(g_3) = e_7^6.$$

$$R_{10}(g_2) = 1. \quad R_{10}(g_3) = e_7^5.$$

$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = e_7^4.$$

$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = e_7^3.$$

$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = e_7^2.$$

$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = e_7.$$

2.15. **Order 15.** $G_{15}^{(1)}$

$$R_2(g_2)=1.\quad R_2(g_3)=e_5^4.$$
$$R_3(g_2)=1.\quad R_3(g_3)=e_5^3.$$
$$R_4(g_2)=1.\quad R_4(g_3)=e_5^2.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_5.$$
$$R_6(g_2)=e_3^2.\quad R_6(g_3)=1.$$
$$R_7(g_2)=e_3.\quad R_7(g_3)=1.$$
$$R_8(g_2)=e_3^2.\quad R_8(g_3)=e_5^4.$$
$$R_9(g_2)=e_3^2.\quad R_9(g_3)=e_5^3.$$
$$R_{10}(g_2)=e_3^2.\quad R_{10}(g_3)=e_5^2.$$
$$R_{11}(g_2)=e_3^2.\quad R_{11}(g_3)=e_5.$$
$$R_{12}(g_2)=e_3.\quad R_{12}(g_3)=e_5^4.$$
$$R_{13}(g_2)=e_3.\quad R_{13}(g_3)=e_5^3.$$
$$R_{14}(g_2)=e_3.\quad R_{14}(g_3)=e_5^2.$$
$$R_{15}(g_2)=e_3.\quad R_{15}(g_3)=e_5.$$

2.16. **Order 16.** $G_{16}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-i.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=i.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-e_8.\quad R_5(g_3)=i.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-e_8^3.\quad R_6(g_3)=-i.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=e_8^3.\quad R_7(g_3)=-i.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=e_8.\quad R_8(g_3)=i.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-e_{16}.\quad R_9(g_3)=e_8.\quad R_9(g_4)=i.\quad R_9(g_5)=-1.$$
$$R_{10}(g_2)=-e_{16}^3.\quad R_{10}(g_3)=e_8^3.\quad R_{10}(g_4)=-i.\quad R_{10}(g_5)=-1.$$
$$R_{11}(g_2)=-e_{16}^5.\quad R_{11}(g_3)=-e_8.\quad R_{11}(g_4)=i.\quad R_{11}(g_5)=-1.$$
$$R_{12}(g_2)=-e_{16}^7.\quad R_{12}(g_3)=-e_8^3.\quad R_{12}(g_4)=-i.\quad R_{12}(g_5)=-1.$$
$$R_{13}(g_2)=e_{16}^7.\quad R_{13}(g_3)=-e_8^3.\quad R_{13}(g_4)=-i.\quad R_{13}(g_5)=-1.$$
$$R_{14}(g_2)=e_{16}^5.\quad R_{14}(g_3)=-e_8.\quad R_{14}(g_4)=i.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=e_{16}^3.\quad R_{15}(g_3)=e_8^3.\quad R_{15}(g_4)=-i.\quad R_{15}(g_5)=-1.$$
$$R_{16}(g_2)=e_{16}.\quad R_{16}(g_3)=e_8.\quad R_{16}(g_4)=i.\quad R_{16}(g_5)=-1.$$

$G_{16}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -i. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = i. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -i. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = i. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1.$$
$$R_9(g_2) = -i. \quad R_9(g_3) = -1. \quad R_9(g_4) = -1. \quad R_9(g_5) = 1.$$
$$R_{10}(g_2) = i. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = -1. \quad R_{10}(g_5) = 1.$$
$$R_{11}(g_2) = -i. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = -1. \quad R_{11}(g_5) = 1.$$
$$R_{12}(g_2) = i. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = -1. \quad R_{12}(g_5) = 1.$$
$$R_{13}(g_2) = -i. \quad R_{13}(g_3) = -i. \quad R_{13}(g_4) = -1. \quad R_{13}(g_5) = -1.$$
$$R_{14}(g_2) = i. \quad R_{14}(g_3) = i. \quad R_{14}(g_4) = -1. \quad R_{14}(g_5) = -1.$$
$$R_{15}(g_2) = -i. \quad R_{15}(g_3) = i. \quad R_{15}(g_4) = -1. \quad R_{15}(g_5) = -1.$$
$$R_{16}(g_2) = i. \quad R_{16}(g_3) = -i. \quad R_{16}(g_4) = -1. \quad R_{16}(g_5) = -1.$$

$G_{16}^{(3)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1.$$
$$R_9(g_2) = -\lambda. \quad R_9(g_3) = -\phi. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = \epsilon.$$
$$R_{10}(g_2) = i\lambda. \quad R_{10}(g_3) = \phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon.$$

$G_{16}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1.$$
$$R_9(g_2) = \lambda. \quad R_9(g_3) = -\kappa. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = \epsilon.$$
$$R_{10}(g_2) = i\lambda. \quad R_{10}(g_3) = \kappa. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon.$$

$G_{16}^{(5)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-e_8.\quad R_9(g_3)=-1.\quad R_9(g_4)=i.\quad R_9(g_5)=-1.$$
$$R_{10}(g_2)=-e_8^3.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-i.\quad R_{10}(g_5)=-1.$$
$$R_{11}(g_2)=e_8^3.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-i.\quad R_{11}(g_5)=-1.$$
$$R_{12}(g_2)=e_8.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=i.\quad R_{12}(g_5)=-1.$$
$$R_{13}(g_2)=-e_8.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=i.\quad R_{13}(g_5)=-1.$$
$$R_{14}(g_2)=-e_8^3.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-i.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=e_8^3.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-i.\quad R_{15}(g_5)=-1.$$
$$R_{16}(g_2)=e_8.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=i.\quad R_{16}(g_5)=-1.$$

$G_{16}^{(6)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=\begin{pmatrix} e_8^3 & 0\\ 0 & -e_8^3\end{pmatrix}.\quad R_9(g_3)=\begin{pmatrix} 0 & -e_8^3\\ e_8 & 0\end{pmatrix}.\quad R_9(g_4)=-i\epsilon.\quad R_9(g_5)=-\epsilon.$$
$$R_{10}(g_2)=\begin{pmatrix} -e_8 & 0\\ 0 & e_8\end{pmatrix}.\quad R_{10}(g_3)=-i\kappa.\quad R_{10}(g_4)=i\epsilon.\quad R_{10}(g_5)=-\epsilon.$$

$G_{16}^{(7)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=\lambda.\quad R_5(g_3)=\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix} -1 & 0\\ -\sqrt{2}i & 1\end{pmatrix}.\quad R_6(g_3)=\begin{pmatrix} \sqrt{2} & -1\\ 1 & -\sqrt{2}i\end{pmatrix}.$$
$$R_6(g_4)=\begin{pmatrix} -1 & \sqrt{2}\\ -\sqrt{2}i & 1\end{pmatrix}.\quad R_6(g_5)=-\epsilon.$$
$$R_7(g_2)=-\phi.\quad R_7(g_3)=\begin{pmatrix} 1/\sqrt{2} & -1/\sqrt{2}\\ -1/\sqrt{2} & -1/\sqrt{2}\end{pmatrix}.\quad R_7(g_4)=-\kappa.\quad R_7(g_5)=-\epsilon.$$

$G_{16}^{(8)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-\lambda.\quad R_5(g_3)=-\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix}-i & \sqrt{2}i\\ 0 & i\end{pmatrix}.\quad R_6(g_3)=-\phi.\quad R_6(g_4)=\begin{pmatrix}-1 & \sqrt{2}\\ -\sqrt{2}i & 1\end{pmatrix}.\quad R_6(g_5)=-\epsilon.$$
$$R_7(g_2)=\begin{pmatrix}-i & 0\\ \sqrt{2} & i\end{pmatrix}.\quad R_7(g_3)=i\kappa.\quad R_7(g_4)=\begin{pmatrix}1 & \sqrt{2}i\\ \sqrt{2}i & -1\end{pmatrix}.\quad R_7(g_5)=-\epsilon.$$

$G_{16}^{(9)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-\lambda.\quad R_5(g_3)=-\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix}i & -\sqrt{2}i\\ 0 & -i\end{pmatrix}.\quad R_6(g_3)=\begin{pmatrix}\sqrt{2}i & -1\\ -1 & -\sqrt{2}i\end{pmatrix}.\quad R_6(g_4)=\begin{pmatrix}1 & \sqrt{2}i\\ \sqrt{2}i & -1\end{pmatrix}.\quad R_6(g_5)=-\epsilon.$$
$$R_7(g_2)=-i\phi.\quad R_7(g_3)=\begin{pmatrix}-1/\sqrt{2} & i/\sqrt{2}\\ i/\sqrt{2} & i/\sqrt{2}\end{pmatrix}.\quad R_7(g_4)=-\kappa.\quad R_7(g_5)=-\epsilon.$$

$G_{16}^{(10)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=-1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=-1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=-1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.$$

$G_{16}^{(11)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -\lambda. \quad R_9(g_3) = -\phi. \quad R_9(g_4) = \epsilon. \quad R_9(g_5) = -\epsilon.$$
$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = -\phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon.$$

$G_{16}^{(12)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -i\lambda. \quad R_9(g_3) = -i\phi. \quad R_9(g_4) = \epsilon. \quad R_9(g_5) = -\epsilon.$$
$$R_{10}(g_2) = -i\lambda. \quad R_{10}(g_3) = -i\phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon.$$

$G_{16}^{(13)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -\lambda. \quad R_9(g_3) = -\phi. \quad R_9(g_4) = -i\epsilon. \quad R_9(g_5) = -\epsilon.$$
$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = -\phi. \quad R_{10}(g_4) = i\epsilon. \quad R_{10}(g_5) = -\epsilon.$$

$G_{16}^{(14)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=-1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=1.\quad R_6(g_4)=-1.\quad R_6(g_5)=-1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.$$

2.17. **Order 17.** $G_{17}^{(1)}$

$$R_j(g_2)=e_{17}^{j-1},\quad j=1\ldots,17.$$

2.18. **Order 18.** $G_{18}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_3(g_3)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.\quad R_3(g_4)=\epsilon.$$

$$R_4(g_2)=\begin{pmatrix}1/(2c_{18})&-1+2\Re e_9-2\Re e_{18}^2\\-1/(2c_{18})&-1/(2c_{18})\end{pmatrix}.$$
$$R_4(g_3)=\begin{pmatrix}1-2\Re e_9+2\Re e_{18}^2&\Re e_{18}^7\\-\Re e_{18}^7&-1\end{pmatrix}.$$
$$R_4(g_4)=\begin{pmatrix}\Re e_{18}^7&1-2\Re e_9+2\Re e_{18}^2\\-1+2\Re e_9-2\Re e_{18}^2&1/(2c_{18})\end{pmatrix}.$$

$$R_5(g_2)=\begin{pmatrix}-2(\Re e_9^2+\Re e_{18})/3&(-2e_9^2-e_9^4-e_9^5-2e_9^7)/3\\(-e_9^2-2e_9^4-2e_9^5-e_9^7)/3&(e_9^2-e_9^4-e_9^5+e_9^7)/3\end{pmatrix}.$$
$$R_5(g_3)=\begin{pmatrix}-2(\Re e_9^2+\Re e_{18})/3&(-2e_9^2-e_9^4-e_9^5-2e_9^7)/3\\(2e_9^2+e_9^4+e_9^5+2e_9^7)/3&(e_9^2+2e_9^4+2e_9^5+e_9^7)/3\end{pmatrix}.$$
$$R_5(g_4)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} e_9^2+e_9^7 & -1 \\ -e_9^3+e_9^4+e_9^5-e_9^6 & -e_9^2-e_9^7 \end{pmatrix}.$$
$$R_6(g_3) = \begin{pmatrix} e_9^3-e_9^4-e_9^5+e_9^6 & e_9^2+e_9^3+e_9^6+e_9^7 \\ -e_9^2-e_9^3-e_9^6-e_9^7 & -e_9^2-e_9^3-e_9^6-e_9^7 \end{pmatrix}.$$
$$R_6(g_4) = \begin{pmatrix} -e_9^2-e_9^7 & -e_9^3+e_9^4+e_9^5-e_9^6 \\ e_9^3-e_9^4-e_9^5+e_9^6 & e_9^2+e_9^3+e_9^6+e_9^7 \end{pmatrix}.$$

$G_{18}^{(2)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-e_9^2-e_9^5.\quad R_5(g_4)=e_3^2.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=-e_9^4-e_9^7.\quad R_6(g_4)=e_3.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=e_9^7.\quad R_7(g_4)=e_3.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=e_9^5.\quad R_8(g_4)=e_3^2.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=e_9^4.\quad R_9(g_4)=e_3.$$
$$R_{10}(g_2)=-1.\quad R_{10}(g_3)=e_9^2.\quad R_{10}(g_4)=e_3^2.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=e_3^2.\quad R_{11}(g_4)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=e_3.\quad R_{12}(g_4)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-e_9^2-e_9^5.\quad R_{13}(g_4)=e_3^2.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=-e_9^4-e_9^7.\quad R_{14}(g_4)=e_3.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=e_9^7.\quad R_{15}(g_4)=e_3.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=e_9^5.\quad R_{16}(g_4)=e_3^2.$$
$$R_{17}(g_2)=1.\quad R_{17}(g_3)=e_9^4.\quad R_{17}(g_4)=e_3.$$
$$R_{18}(g_2)=1.\quad R_{18}(g_3)=e_9^2.\quad R_{18}(g_4)=e_3^2.$$

$G_{18}^{(3)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_3^2.\quad R_5(g_4)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.$$
$$R_7(g_2)=\begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}.\quad R_7(g_3)=\epsilon.\quad R_7(g_4)=\begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$
$$R_8(g_2)=\begin{pmatrix} 0 & e_3^2 \\ e_3 & 0 \end{pmatrix}.\quad R_8(g_3)=\begin{pmatrix} e_3 & 0 \\ 0 & e_3 \end{pmatrix}.\quad R_8(g_4)=\begin{pmatrix} -1 & -e_3^2 \\ e_3 & 0 \end{pmatrix}.$$
$$R_9(g_2)=\begin{pmatrix} 1 & 0 \\ -e_3 & -1 \end{pmatrix}.\quad R_9(g_3)=\begin{pmatrix} e_3^2 & 0 \\ 0 & e_3^2 \end{pmatrix}.\quad R_9(g_4)=\begin{pmatrix} 0 & e_3^2 \\ -e_3 & -1 \end{pmatrix}.$$

$G_{18}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_3(g_3) = \epsilon. \quad R_3(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_4(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_4(g_3) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}. \quad R_4(g_4) = \epsilon.$$

$$R_5(g_2) = \phi. \quad R_5(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_5(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_6(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_6(g_4) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$G_{18}^{(5)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = e_3^2.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = e_3.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = e_3^2. \quad R_5(g_4) = 1.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = e_3. \quad R_6(g_4) = 1.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = e_3^2. \quad R_7(g_4) = e_3^2.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = e_3. \quad R_8(g_4) = e_3.$$

$$R_9(g_2) = -1. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = e_3.$$

$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_3. \quad R_{10}(g_4) = e_3^2.$$

$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_3^2.$$

$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3.$$

$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = e_3^2. \quad R_{13}(g_4) = 1.$$

$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = e_3. \quad R_{14}(g_4) = 1.$$

$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = e_3^2. \quad R_{15}(g_4) = e_3^2.$$

$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_3. \quad R_{16}(g_4) = e_3.$$

$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = e_3^2. \quad R_{17}(g_4) = e_3.$$

$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = e_3. \quad R_{18}(g_4) = e_3^2.$$

2.19. **Order 19.** $G_{19}^{(1)}$

$$R_j(g_2) = e_{19}^{j-1}, \quad j = 1 \ldots, 19.$$

2.20. **Order 20.** $G_{20}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1.$$

$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$

$$R_5(g_2) = i\phi. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ 2\Re e_5 & -1 \end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} i & 0 \\ -\varphi & -i \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \begin{pmatrix} -1 & -e_{20}^{13} - e_{20}^{17} \\ -e_{20}^{13} - e_{20}^{17} & -\varphi \end{pmatrix}.$$

$$R_7(g_2) = \begin{pmatrix} 2\Re e_5 & -1 \\ -2\Re e_5 & -2\Re e_5 \end{pmatrix}. \quad R_7(g_3) = \epsilon. \quad R_7(g_4) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ 2\Re e_5 & -1 \end{pmatrix}.$$

$$R_8(g_2) = \begin{pmatrix} 1 & 0 \\ \varphi & -1 \end{pmatrix}. \quad R_8(g_3) = \epsilon. \quad R_8(g_4) = \begin{pmatrix} -\varphi & -\varphi \\ \varphi & -1 \end{pmatrix}.$$

$G_{20}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = e_5^4. \quad R_3(g_4) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = e_5^3. \quad R_4(g_4) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = e_5^2. \quad R_5(g_4) = 1.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = e_5. \quad R_6(g_4) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = e_5^4. \quad R_7(g_4) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = e_5^3. \quad R_8(g_4) = 1.$$

$$R_9(g_2) = 1. \quad R_9(g_3) = e_5^2. \quad R_9(g_4) = 1.$$

$$R_{10}(g_2) = 1. \quad R_{10}(g_3) = e_5. \quad R_{10}(g_4) = 1.$$

$$R_{11}(g_2) = -i. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = -1.$$

$$R_{12}(g_2) = i. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = -1.$$

$$R_{13}(g_2) = -i. \quad R_{13}(g_3) = e_5^4. \quad R_{13}(g_4) = -1.$$

$$R_{14}(g_2) = -i. \quad R_{14}(g_3) = e_5^3. \quad R_{14}(g_4) = -1.$$

$$R_{15}(g_2) = -i. \quad R_{15}(g_3) = e_5^2. \quad R_{15}(g_4) = -1.$$

$$R_{16}(g_2) = -i. \quad R_{16}(g_3) = e_5. \quad R_{16}(g_4) = -1.$$

$$R_{17}(g_2) = i. \quad R_{17}(g_3) = e_5^4. \quad R_{17}(g_4) = -1.$$

$$R_{18}(g_2) = i. \quad R_{18}(g_3) = e_5^3. \quad R_{18}(g_4) = -1.$$

$$R_{19}(g_2) = i. \quad R_{19}(g_3) = e_5^2. \quad R_{19}(g_4) = -1.$$

$$R_{20}(g_2) = i. \quad R_{20}(g_3) = e_5. \quad R_{20}(g_4) = -1.$$

$G_{20}^{(3)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$

$$R_5(g_2) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ -1 & -1 & -1 & -1 \end{pmatrix}.$$

$$R_5(g_3) = \begin{pmatrix} -1 & -1 & -1 & -1 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix}.$$

$$R_5(g_4) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ -1 & -1 & -1 & -1 \\ 0 & 0 & 1 & 0 \end{pmatrix}.$$

$G_{20}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ -1 & 2\Re e_5 \end{pmatrix}. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \begin{pmatrix} -1 & 2\Re e_5 \\ -2\Re e_5 & -2\Re e_5 \end{pmatrix}.$$
$$R_6(g_2) = \begin{pmatrix} \varphi & -1 \\ -\varphi & -\varphi \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \begin{pmatrix} -\varphi & -\varphi \\ \varphi & -1 \end{pmatrix}.$$
$$R_7(g_2) = \phi. \quad R_7(g_3) = \epsilon. \quad R_7(g_4) = \begin{pmatrix} \varphi & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_8(g_2) = \phi. \quad R_8(g_3) = \epsilon. \quad R_8(g_4) = \begin{pmatrix} -\varphi & -\varphi \\ \varphi & -1 \end{pmatrix}.$$

$G_{20}^{(5)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_5^4.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_5^3.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = -1. \quad R_7(g_4) = e_5^2.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = -1. \quad R_8(g_4) = e_5.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = 1. \quad R_9(g_4) = e_5^4.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = 1. \quad R_{10}(g_4) = e_5^3.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_5^2.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_5.$$

$$\begin{array}{lll}
R_{13}(g_2)=1. & R_{13}(g_3)=-1. & R_{13}(g_4)=e_5^4.\\
R_{14}(g_2)=1. & R_{14}(g_3)=-1. & R_{14}(g_4)=e_5^3.\\
R_{15}(g_2)=1. & R_{15}(g_3)=-1. & R_{15}(g_4)=e_5^2.\\
R_{16}(g_2)=1. & R_{16}(g_3)=-1. & R_{16}(g_4)=e_5.\\
R_{17}(g_2)=1. & R_{17}(g_3)=1. & R_{17}(g_4)=e_5^4.\\
R_{18}(g_2)=1. & R_{18}(g_3)=1. & R_{18}(g_4)=e_5^3.\\
R_{19}(g_2)=1. & R_{19}(g_3)=1. & R_{19}(g_4)=e_5^2.\\
R_{20}(g_2)=1. & R_{20}(g_3)=1. & R_{20}(g_4)=e_5.
\end{array}$$

2.21. **Order 21.** $G_{21}^{(1)}$

$$\begin{array}{ll}
R_2(g_2)=e_3^2. & R_2(g_3)=1.\\
R_3(g_2)=e_3. & R_3(g_3)=1.
\end{array}$$

$$R_4(g_2)=\begin{pmatrix}
(e_7^3+e_7^5+e_7^6)/2 & e_7+e_7^2+e_7^4+(e_7^3+e_7^5+e_7^6)/2 & -(e_7^3+e_7^5+e_7^6)/2\\
e_7+e_7^2+e_7^4+(e_7^3+e_7^5+e_7^6)/2 & -(e_7^3+e_7^5+e_7^6)/2 & (e_7^3+e_7^5+e_7^6)/2\\
1 & 0 & 0
\end{pmatrix}.$$

$$R_4(g_3)=\begin{pmatrix}
0 & 0 & 1\\
e_7+e_7^2+e_7^4+(e_7^3+e_7^5+e_7^6)/2 & -(e_7^3+e_7^5+e_7^6)/2 & (e_7^3+e_7^5+e_7^6)/2\\
-(e_7^3+e_7^5+e_7^6)/2 & (e_7^3+e_7^5+e_7^6)/2 & e_7+e_7^2+e_7^4+(e_7^3+e_7^5+e_7^6)/2
\end{pmatrix}.$$

$$R_5(g_2)=\begin{pmatrix}
0 & 1 & 0\\
e_7^3+e_7^5+e_7^6 & 1 & -e_7-e_7^2-e_7^4\\
e_7+e_7^2+e_7^4 & -1 & -1
\end{pmatrix}.$$

$$R_5(g_3)=\begin{pmatrix}
1 & e_7+e_7^2+e_7^4 & -e_7^3-e_7^5-e_7^6\\
-1 & e_7^3+e_7^5+e_7^6 & -1\\
e_7+e_7^2+e_7^4 & -1 & -1
\end{pmatrix}.$$

$G_{21}^{(2)}$

$$\begin{array}{ll}
R_2(g_2)=1. & R_2(g_3)=e_7^6.\\
R_3(g_2)=1. & R_3(g_3)=e_7^5.\\
R_4(g_2)=1. & R_4(g_3)=e_7^4.\\
R_5(g_2)=1. & R_5(g_3)=e_7^3.\\
R_6(g_2)=1. & R_6(g_3)=e_7^2.\\
R_7(g_2)=1. & R_7(g_3)=e_7.\\
R_8(g_2)=e_3^2. & R_8(g_3)=1.\\
R_9(g_2)=e_3. & R_9(g_3)=1.\\
R_{10}(g_2)=e_3^2. & R_{10}(g_3)=e_7^6.\\
R_{11}(g_2)=e_3^2. & R_{11}(g_3)=e_7^5.\\
R_{12}(g_2)=e_3^2. & R_{12}(g_3)=e_7^4.\\
R_{13}(g_2)=e_3^2. & R_{13}(g_3)=e_7^3.
\end{array}$$

$$R_{14}(g_2) = e_3^2. \quad R_{14}(g_3) = e_7^2.$$
$$R_{15}(g_2) = e_3^2. \quad R_{15}(g_3) = e_7.$$
$$R_{16}(g_2) = e_3. \quad R_{16}(g_3) = e_7^6.$$
$$R_{17}(g_2) = e_3. \quad R_{17}(g_3) = e_7^5.$$
$$R_{18}(g_2) = e_3. \quad R_{18}(g_3) = e_7^4.$$
$$R_{19}(g_2) = e_3. \quad R_{19}(g_3) = e_7^3.$$
$$R_{20}(g_2) = e_3. \quad R_{20}(g_3) = e_7^2.$$
$$R_{21}(g_2) = e_3. \quad R_{21}(g_3) = e_7.$$

2.22. **Order 22.** $G_{22}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = \begin{pmatrix} e_{11}^3 + e_{11}^8 & -1 \\ \alpha_{22,1} & -e_{11}^3 - e_{11}^8 \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} -e_{11}^2 - e_{11}^3 - e_{11}^8 - e_{11}^9 & \alpha_{22,2} \\ -\alpha_{22,2} & -\alpha_{22,2} \end{pmatrix}.$$

Constants:

$$\alpha_{22,1} \equiv -e_{11} - e_{11}^2 - e_{11}^3 - e_{11}^4 - e_{11}^7 - e_{11}^8 - e_{11}^9 - e_{11}^{10};$$
$$\alpha_{22,2} \equiv -e_{11}^2 - e_{11}^3 - e_{11}^4 - e_{11}^7 - e_{11}^8 - e_{11}^9.$$

$$R_4(g_2) = \begin{pmatrix} e_{11}^3 + e_{11}^4 + e_{11}^5 + e_{11}^6 + e_{11}^7 + e_{11}^8 & e_{11}^3 + e_{11}^4 + e_{11}^5 + e_{11}^6 + e_{11}^7 + e_{11}^8 \\ -e_{11}^4 - e_{11}^5 - e_{11}^6 - e_{11}^7 & -e_{11}^3 - e_{11}^4 - e_{11}^5 - e_{11}^6 - e_{11}^7 - e_{11}^8 \end{pmatrix}.$$
$$R_4(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & e_{11}^5 + e_{11}^6 \end{pmatrix}.$$

$$R_5(g_2) = \begin{pmatrix} \alpha_{22,2} & -e_{11}^2 - e_{11}^3 - e_{11}^8 - e_{11}^9 \\ -\alpha_{22,2} & -\alpha_{22,2} \end{pmatrix}.$$
$$R_5(g_3) = \begin{pmatrix} -e_{11}^3 - e_{11}^8 & \alpha_{11,1} \\ -\alpha_{11,1} & e_{11}^2 + e_{11}^3 + e_{11}^8 + e_{11}^9 \end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} e_{11}^2 + e_{11}^9 & -1 \\ -e_{11} - e_{11}^2 - e_{11}^3 - e_{11}^5 - e_{11}^6 - e_{11}^8 - e_{11}^9 - e_{11}^{10} & -e_{11}^2 - e_{11}^9 \end{pmatrix}.$$
$$R_6(g_3) = \begin{pmatrix} -e_{11} - e_{11}^2 - e_{11}^5 - e_{11}^6 - e_{11}^9 - e_{11}^{10} & -e_{11}^2 - e_{11}^5 - e_{11}^6 - e_{11}^9 \\ e_{11}^2 + e_{11}^5 + e_{11}^6 + e_{11}^9 & e_{11} + e_{11}^2 + e_{11}^3 + e_{11}^5 + e_{11}^6 + e_{11}^8 + e_{11}^9 + e_{11}^{10} \end{pmatrix}.$$

$$R_7(g_2) = \begin{pmatrix} 1 & 0 \\ e_{11} + e_{11}^{10} & -1 \end{pmatrix}. \quad R_7(g_3) = \begin{pmatrix} e_{11} + e_{11}^{10} & -1 \\ 1 & 0 \end{pmatrix}.$$

$G_{22}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = e_{11}^{10}.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = e_{11}^{9}.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = e_{11}^{8}.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = e_{11}^{7}.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = e_{11}^{6}.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = e_{11}^{5}.$$

$$R_9(g_2) = -1. \quad R_9(g_3) = e_{11}^{4}.$$

$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_{11}^{3}.$$

$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = e_{11}^{2}.$$

$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = e_{11}.$$

$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = e_{11}^{10}.$$

$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = e_{11}^{9}.$$

$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = e_{11}^{8}.$$

$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_{11}^{7}.$$

$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = e_{11}^{6}.$$

$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = e_{11}^{5}.$$

$$R_{19}(g_2) = 1. \quad R_{19}(g_3) = e_{11}^{4}.$$

$$R_{20}(g_2) = 1. \quad R_{20}(g_3) = e_{11}^{3}.$$

$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = e_{11}^{2}.$$

$$R_{22}(g_2) = 1. \quad R_{22}(g_3) = e_{11}.$$

2.23. **Order 23.** $G_{23}^{(1)}$

$$R_j(g_2) = e_{23}^{j-1}, \quad j = 1 \ldots, 23.$$

2.24. **Order 24.** $G_{24}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-i.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=i.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-e_8.\quad R_5(g_3)=i.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-e_8^3.\quad R_6(g_3)=-i.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=e_8^3.\quad R_7(g_3)=-i.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=e_8.\quad R_8(g_3)=i.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=\kappa.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=\epsilon.\quad R_9(g_5)=\begin{pmatrix}-1&i\\i&0\end{pmatrix}.$$
$$R_{10}(g_2)=\phi.\quad R_{10}(g_3)=\epsilon.\quad R_{10}(g_4)=\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.$$
$$R_{11}(g_2)=\begin{pmatrix}e_8^3&0\\-i&-e_8^3\end{pmatrix}.\quad R_{11}(g_3)=-i\epsilon.\quad R_{11}(g_4)=-\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}-1&-e_8\\-e_8^3&0\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}e_8&0\\e_8^3&-e_8\end{pmatrix}.\quad R_{12}(g_3)=i\epsilon.\quad R_{12}(g_4)=-\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}0&i\\i&-1\end{pmatrix}.$$

$G_{24}^{(2)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_3^2.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=e_3^2.\quad R_9(g_4)=-1.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=-i.\quad R_{10}(g_3)=e_3.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=i.\quad R_{11}(g_3)=e_3^2.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=e_3.\quad R_{12}(g_4)=-1.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=-e_8.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=i.\quad R_{13}(g_5)=-1.$$
$$R_{14}(g_2)=-e_8^3.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-i.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=e_8^3.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-i.\quad R_{15}(g_5)=-1.$$
$$R_{16}(g_2)=e_8.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=i.\quad R_{16}(g_5)=-1.$$
$$R_{17}(g_2)=-e_8.\quad R_{17}(g_3)=e_3^2.\quad R_{17}(g_4)=i.\quad R_{17}(g_5)=-1.$$
$$R_{18}(g_2)=-e_8.\quad R_{18}(g_3)=e_3.\quad R_{18}(g_4)=i.\quad R_{18}(g_5)=-1.$$
$$R_{19}(g_2)=-e_8^3.\quad R_{19}(g_3)=e_3^2.\quad R_{19}(g_4)=-i.\quad R_{19}(g_5)=-1.$$
$$R_{20}(g_2)=-e_8^3.\quad R_{20}(g_3)=e_3.\quad R_{20}(g_4)=-i.\quad R_{20}(g_5)=-1.$$
$$R_{21}(g_2)=e_8^3.\quad R_{21}(g_3)=e_3^2.\quad R_{21}(g_4)=-i.\quad R_{21}(g_5)=-1.$$
$$R_{22}(g_2)=e_8^3.\quad R_{22}(g_3)=e_3.\quad R_{22}(g_4)=-i.\quad R_{22}(g_5)=-1.$$
$$R_{23}(g_2)=e_8.\quad R_{23}(g_3)=e_3^2.\quad R_{23}(g_4)=i.\quad R_{23}(g_5)=-1.$$
$$R_{24}(g_2)=e_8.\quad R_{24}(g_3)=e_3.\quad R_{24}(g_4)=i.\quad R_{24}(g_5)=-1.$$

$G_{24}^{(3)}$

$$R_2(g_2)=e_3^2.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=e_3.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=\begin{pmatrix} e_3^2 & -e_3\\ 0 & e_3\end{pmatrix}.\quad R_4(g_3)=\begin{pmatrix} -e_3 & 1\\ e_3 & e_3\end{pmatrix}.\quad R_4(g_4)=\begin{pmatrix} 0 & -e_3\\ e_3^2 & 0\end{pmatrix}.\quad R_4(g_5)=-\epsilon.$$
$$R_5(g_2)=\begin{pmatrix} 0 & -1\\ e_3^2 & -e_3\end{pmatrix}.\quad R_5(g_3)=\begin{pmatrix} -e_3 & -e_3^2\\ -e_3^2 & e_3\end{pmatrix}.\quad R_5(g_4)=\begin{pmatrix} -e_3^2 & e_3\\ e_3 & e_3^2\end{pmatrix}.\quad R_5(g_5)=-\epsilon.$$
$$R_6(g_2)=\begin{pmatrix} 0 & 1\\ -e_3 & -e_3^2\end{pmatrix}.\quad R_6(g_3)=\begin{pmatrix} -e_3^2 & e_3\\ e_3 & e_3^2\end{pmatrix}.\quad R_6(g_4)=\begin{pmatrix} -e_3 & -e_3^2\\ -e_3^2 & e_3\end{pmatrix}.\quad R_6(g_5)=-\epsilon.$$

$$R_7(g_2)=\begin{pmatrix} -1 & -1 & -1\\ 0 & 1 & 0\\ 1 & 0 & 0\end{pmatrix}.\quad R_7(g_3)=\begin{pmatrix} 0 & 1 & 0\\ 1 & 0 & 0\\ -1 & -1 & -1\end{pmatrix}.$$
$$R_7(g_4)=\begin{pmatrix} 0 & 0 & 1\\ -1 & -1 & -1\\ 1 & 0 & 0\end{pmatrix}.\quad R_7(g_5)=\begin{pmatrix} 1 & 0 & 0\\ 0 & 1 & 0\\ 0 & 0 & 1\end{pmatrix}.$$

$G_{24}^{(4)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-i\lambda.\quad R_5(g_3)=-i\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix} 1 & 0\\ -1 & -1\end{pmatrix}.\quad R_6(g_3)=-\epsilon.\quad R_6(g_4)=\epsilon.\quad R_6(g_5)=\begin{pmatrix} 0 & 1\\ -1 & -1\end{pmatrix}.$$
$$R_7(g_2)=\begin{pmatrix} 1 & 0\\ -1 & -1\end{pmatrix}.\quad R_7(g_3)=\epsilon.\quad R_7(g_4)=\epsilon.\quad R_7(g_5)=\begin{pmatrix} -1 & -1\\ 1 & 0\end{pmatrix}.$$
$$R_8(g_2)=\begin{pmatrix} 2i & \alpha_{24}\\ \alpha_{24} & -2i\end{pmatrix}.\quad R_8(g_3)=\begin{pmatrix} \alpha_{24} & -2i\\ -2i & -\alpha_{24}\end{pmatrix}.\quad R_8(g_4)=-\epsilon.\quad R_8(g_5)=\begin{pmatrix} -2 & \sqrt{3}i\\ \sqrt{3}i & 1\end{pmatrix}.$$

Constants:

$$\alpha_{24}\equiv -e_{12}^7+e_{12}^{11}.$$

$$R_9(g_2)=-i\lambda.\quad R_9(g_3)=i\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix} -1/2 & \sqrt{3}i/2\\ \sqrt{3}i/2 & -1/2\end{pmatrix}.$$

$G_{24}^{(5)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-i.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=i.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-i.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=i.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=\begin{pmatrix} 1 & 0\\ -1 & -1\end{pmatrix}.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=\epsilon.\quad R_9(g_5)=\begin{pmatrix} -1 & -1\\ 1 & 0\end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_{10}(g_3) = \epsilon. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} 1 & 0 \\ 1 & -1 \end{pmatrix}. \quad R_{11}(g_3) = -i\epsilon. \quad R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & -1 \end{pmatrix}.$$

$$R_{12}(g_2) = \phi. \quad R_{12}(g_3) = i\epsilon. \quad R_{12}(g_4) = -\epsilon. \quad R_{12}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_{24}^{(6)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = \lambda. \quad R_5(g_3) = \kappa. \quad R_5(g_4) = -\epsilon. \quad R_5(g_5) = \epsilon.$$

$$R_6(g_2) = \phi. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_7(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_7(g_3) = \epsilon. \quad R_7(g_4) = \epsilon. \quad R_7(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_8(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_8(g_3) = \begin{pmatrix} \alpha_{24}/3 & 2\alpha_{24}/3 \\ -2\alpha_{24}/3 & -\alpha_{24}/3 \end{pmatrix}. \quad R_8(g_4) = -\epsilon. \quad R_8(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_9(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_9(g_3) = \begin{pmatrix} \alpha_{24}/3 & 2\alpha_{24}/3 \\ -2\alpha_{24}/3 & -\alpha_{24}/3 \end{pmatrix}. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_{24}^{(7)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = -1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = -1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$

$$R_9(g_2) = \begin{pmatrix} -i & -1 \\ 0 & i \end{pmatrix}. \quad R_9(g_3) = -\epsilon. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = \begin{pmatrix} -1 & i \\ i & 0 \end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_{11}(g_2) = i\phi. \quad R_{11}(g_3) = \epsilon. \quad R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_{12}(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \epsilon. \quad R_{12}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$G_{24}^{(8)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=\begin{pmatrix}1&0\\1&-1\end{pmatrix}.\quad R_5(g_3)=-\epsilon.\quad R_5(g_4)=\epsilon.\quad R_5(g_5)=\begin{pmatrix}-1&1\\-1&0\end{pmatrix}.$$
$$R_6(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_6(g_3)=\epsilon.\quad R_6(g_4)=\epsilon.\quad R_6(g_5)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$
$$R_7(g_2)=\lambda.\quad R_7(g_3)=-\phi.\quad R_7(g_4)=-\epsilon.\quad R_7(g_5)=\epsilon.$$
$$R_8(g_2)=\begin{pmatrix}1/2&-\sqrt{3}i/2\\\sqrt{3}i/2&-1/2\end{pmatrix}.\quad R_8(g_3)=-\phi.\quad R_8(g_4)=-\epsilon.\quad R_8(g_5)=\begin{pmatrix}-1/2&\sqrt{3}i/2\\\sqrt{3}i/2&-1/2\end{pmatrix}.$$
$$R_9(g_2)=\begin{pmatrix}1&-1\\0&-1\end{pmatrix}.\quad R_9(g_3)=\begin{pmatrix}-i/\sqrt{3}&2i/\sqrt{3}\\-2i/\sqrt{3}&i/\sqrt{3}\end{pmatrix}.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix}0&-1\\1&-1\end{pmatrix}.$$

$G_{24}^{(9)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=e_3^2.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=-1.\quad R_6(g_4)=e_3.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=e_3^2.\quad R_7(g_5)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=e_3.\quad R_8(g_5)=1.$$
$$R_9(g_2)=1.\quad R_9(g_3)=-1.\quad R_9(g_4)=e_3^2.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=e_3.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=e_3^2.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=e_3.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=-1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=-1.\quad R_{14}(g_4)=1.\quad R_{14}(g_5)=-1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=-1.\quad R_{15}(g_4)=e_3^2.\quad R_{15}(g_5)=-1.$$
$$R_{16}(g_2)=-i.\quad R_{16}(g_3)=-1.\quad R_{16}(g_4)=e_3.\quad R_{16}(g_5)=-1.$$
$$R_{17}(g_2)=i.\quad R_{17}(g_3)=-1.\quad R_{17}(g_4)=e_3^2.\quad R_{17}(g_5)=-1.$$
$$R_{18}(g_2)=i.\quad R_{18}(g_3)=-1.\quad R_{18}(g_4)=e_3.\quad R_{18}(g_5)=-1.$$
$$R_{19}(g_2)=-i.\quad R_{19}(g_3)=1.\quad R_{19}(g_4)=1.\quad R_{19}(g_5)=-1.$$
$$R_{20}(g_2)=i.\quad R_{20}(g_3)=1.\quad R_{20}(g_4)=1.\quad R_{20}(g_5)=-1.$$
$$R_{21}(g_2)=-i.\quad R_{21}(g_3)=1.\quad R_{21}(g_4)=e_3^2.\quad R_{21}(g_5)=-1.$$
$$R_{22}(g_2)=-i.\quad R_{22}(g_3)=1.\quad R_{22}(g_4)=e_3.\quad R_{22}(g_5)=-1.$$
$$R_{23}(g_2)=i.\quad R_{23}(g_3)=1.\quad R_{23}(g_4)=e_3^2.\quad R_{23}(g_5)=-1.$$
$$R_{24}(g_2)=i.\quad R_{24}(g_3)=1.\quad R_{24}(g_4)=e_3.\quad R_{24}(g_5)=-1.$$

$G_{24}^{(10)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=e_3^2.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=-1.\quad R_6(g_4)=e_3.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=e_3^2.\quad R_7(g_5)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=e_3.\quad R_8(g_5)=1.$$
$$R_9(g_2)=1.\quad R_9(g_3)=-1.\quad R_9(g_4)=e_3^2.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=e_3.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=e_3^2.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=e_3.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=-\lambda.\quad R_{13}(g_3)=\phi.\quad R_{13}(g_4)=\epsilon.\quad R_{13}(g_5)=-\epsilon.$$
$$R_{14}(g_2)=\lambda.\quad R_{14}(g_3)=-\phi.\quad R_{14}(g_4)=\begin{pmatrix} e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_{14}(g_5)=-\epsilon.$$
$$R_{15}(g_2)=\lambda.\quad R_{15}(g_3)=\begin{pmatrix} 0 & -e_3\\ -e_3^2 & 0\end{pmatrix}.\quad R_{15}(g_4)=\begin{pmatrix} e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{15}(g_5)=-\epsilon.$$

$G_{24}^{(11)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=e_3^2.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=-1.\quad R_6(g_4)=e_3.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=e_3^2.\quad R_7(g_5)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=e_3.\quad R_8(g_5)=1.$$
$$R_9(g_2)=1.\quad R_9(g_3)=-1.\quad R_9(g_4)=e_3^2.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=e_3.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=e_3^2.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=e_3.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=i\lambda.\quad R_{13}(g_3)=i\phi.\quad R_{13}(g_4)=\epsilon.\quad R_{13}(g_5)=-\epsilon.$$
$$R_{14}(g_2)=-i\lambda.\quad R_{14}(g_3)=\begin{pmatrix} 0 & e_{12}^7\\ e_{12}^{11} & 0\end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix} e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_{14}(g_5)=-\epsilon.$$
$$R_{15}(g_2)=i\lambda.\quad R_{15}(g_3)=\begin{pmatrix} 0 & e_{12}^{11}\\ e_{12}^{7} & 0\end{pmatrix}.\quad R_{15}(g_4)=\begin{pmatrix} e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{15}(g_5)=-\epsilon.$$

$G_{24}^{(12)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$

$$R_3(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_3(g_3)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.\quad R_3(g_4)=\epsilon.\quad R_3(g_5)=\epsilon.$$

$$R_4(g_2)=\begin{pmatrix}0&1&0\\1&0&0\\1&1&-1\end{pmatrix}.\quad R_4(g_3)=\begin{pmatrix}0&-1&0\\0&1&-1\\1&1&-1\end{pmatrix}.$$

$$R_4(g_4)=\begin{pmatrix}-1&0&0\\1&1&-1\\0&0&-1\end{pmatrix}.\quad R_4(g_5)=\begin{pmatrix}0&0&1\\0&-1&0\\1&0&0\end{pmatrix}.$$

$$R_5(g_2)=\begin{pmatrix}-1&0&0\\-1&1&0\\1&0&1\end{pmatrix}.\quad R_5(g_3)=\begin{pmatrix}-1&0&-1\\-1&1&0\\1&0&0\end{pmatrix}.$$

$$R_5(g_4)=\begin{pmatrix}0&-1&-1\\0&-1&0\\-1&1&0\end{pmatrix}.\quad R_5(g_5)=\begin{pmatrix}0&1&1\\1&0&1\\0&0&-1\end{pmatrix}.$$

$G_{24}^{(13)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_3^2.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.\quad R_6(g_5)=1.$$

$$R_7(g_2)=\begin{pmatrix}-1&0&0\\0&-1&0\\0&0&-1\end{pmatrix}.\quad R_7(g_3)=\begin{pmatrix}0&0&1\\1&0&0\\0&1&0\end{pmatrix}.$$

$$R_7(g_4)=\begin{pmatrix}0&1&0\\1&0&0\\-1&-1&-1\end{pmatrix}.\quad R_7(g_5)=\begin{pmatrix}0&0&1\\-1&-1&-1\\1&0&0\end{pmatrix}.$$

$$R_8(g_2)=\begin{pmatrix}1&0&0\\0&1&0\\0&0&1\end{pmatrix}.\quad R_8(g_3)=\begin{pmatrix}1&0&0\\-1&-1&-1\\0&1&0\end{pmatrix}.$$

$$R_8(g_4)=\begin{pmatrix}0&0&1\\-1&-1&-1\\1&0&0\end{pmatrix}.\quad R_8(g_5)=\begin{pmatrix}0&1&0\\1&0&0\\-1&-1&-1\end{pmatrix}.$$

$G_{24}^{(14)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$

$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=\begin{pmatrix}-1&-1\\0&1\end{pmatrix}.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$
$$R_{10}(g_2)=\begin{pmatrix}-1&1\\0&1\end{pmatrix}.\quad R_{10}(g_3)=-\epsilon.\quad R_{10}(g_4)=\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}-1&1\\-1&0\end{pmatrix}.$$
$$R_{11}(g_2)=\begin{pmatrix}-1&1\\0&1\end{pmatrix}.\quad R_{11}(g_3)=\epsilon.\quad R_{11}(g_4)=-\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}-1&1\\-1&0\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_{12}(g_3)=\epsilon.\quad R_{12}(g_4)=\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$

$G_{24}^{(15)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=e_3^2.$$
$$R_{10}(g_2)=-1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=e_3.$$
$$R_{11}(g_2)=-1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=e_3^2.$$
$$R_{12}(g_2)=-1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=e_3.$$
$$R_{13}(g_2)=-1.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=e_3^2.$$
$$R_{14}(g_2)=-1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=e_3.$$
$$R_{15}(g_2)=-1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=e_3^2.$$
$$R_{16}(g_2)=-1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=e_3.$$
$$R_{17}(g_2)=1.\quad R_{17}(g_3)=-1.\quad R_{17}(g_4)=-1.\quad R_{17}(g_5)=e_3^2.$$
$$R_{18}(g_2)=1.\quad R_{18}(g_3)=-1.\quad R_{18}(g_4)=-1.\quad R_{18}(g_5)=e_3.$$
$$R_{19}(g_2)=1.\quad R_{19}(g_3)=-1.\quad R_{19}(g_4)=1.\quad R_{19}(g_5)=e_3^2.$$
$$R_{20}(g_2)=1.\quad R_{20}(g_3)=-1.\quad R_{20}(g_4)=1.\quad R_{20}(g_5)=e_3.$$
$$R_{21}(g_2)=1.\quad R_{21}(g_3)=1.\quad R_{21}(g_4)=-1.\quad R_{21}(g_5)=e_3^2.$$
$$R_{22}(g_2)=1.\quad R_{22}(g_3)=1.\quad R_{22}(g_4)=-1.\quad R_{22}(g_5)=e_3.$$
$$R_{23}(g_2)=1.\quad R_{23}(g_3)=1.\quad R_{23}(g_4)=1.\quad R_{23}(g_5)=e_3^2.$$
$$R_{24}(g_2)=1.\quad R_{24}(g_3)=1.\quad R_{24}(g_4)=1.\quad R_{24}(g_5)=e_3.$$

2.25. **Order 25.** $G_{25}^{(1)}$

$$R_2(g_2) = e_5. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = e_5^2. \quad R_3(g_3) = 1.$$
$$R_4(g_2) = e_5^3. \quad R_4(g_3) = 1.$$
$$R_5(g_2) = e_5^4. \quad R_5(g_3) = 1.$$
$$R_6(g_2) = -e_{25}^6 - e_{25}^{11} - e_{25}^{16} - e_{25}^{21}. \quad R_6(g_3) = e_5.$$
$$R_7(g_2) = e_{25}^6. \quad R_7(g_3) = e_5.$$
$$R_8(g_2) = e_{25}^{11}. \quad R_8(g_3) = e_5.$$
$$R_9(g_2) = e_{25}^{16}. \quad R_9(g_3) = e_5.$$
$$R_{10}(g_2) = e_{25}^{21}. \quad R_{10}(g_3) = e_5.$$
$$R_{11}(g_2) = -e_{25}^7 - e_{25}^{12} - e_{25}^{17} - e_{25}^{22}. \quad R_{11}(g_3) = e_5^2.$$
$$R_{12}(g_2) = e_{25}^7. \quad R_{12}(g_3) = e_5^2.$$
$$R_{13}(g_2) = e_{25}^{12}. \quad R_{13}(g_3) = e_5^2.$$
$$R_{14}(g_2) = e_{25}^{17}. \quad R_{14}(g_3) = e_5^2.$$
$$R_{15}(g_2) = e_{25}^{22}. \quad R_{15}(g_3) = e_5^2.$$
$$R_{16}(g_2) = e_{25}^3. \quad R_{16}(g_3) = e_5^3.$$
$$R_{17}(g_2) = e_{25}^8. \quad R_{17}(g_3) = e_5^3.$$
$$R_{18}(g_2) = e_{25}^{13}. \quad R_{18}(g_3) = e_5^3.$$
$$R_{19}(g_2) = e_{25}^{18}. \quad R_{19}(g_3) = e_5^3.$$
$$R_{20}(g_2) = -e_{25}^3 - e_{25}^8 - e_{25}^{13} - e_{25}^{18}. \quad R_{20}(g_3) = e_5^3.$$
$$R_{21}(g_2) = e_{25}^4. \quad R_{21}(g_3) = e_5^4.$$
$$R_{22}(g_2) = e_{25}^9. \quad R_{22}(g_3) = e_5^4.$$
$$R_{23}(g_2) = e_{25}^{14}. \quad R_{23}(g_3) = e_5^4.$$
$$R_{24}(g_2) = e_{25}^{19}. \quad R_{24}(g_3) = e_5^4.$$
$$R_{25}(g_2) = -e_{25}^4 - e_{25}^9 - e_{25}^{14} - e_{25}^{19}. \quad R_{25}(g_3) = e_5^4.$$

$G_{25}^{(2)}$

$$R_2(g_2) = e_5. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = e_5^2. \quad R_3(g_3) = 1.$$
$$R_4(g_2) = e_5^3. \quad R_4(g_3) = 1.$$
$$R_5(g_2) = e_5^4. \quad R_5(g_3) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = e_5.$$
$$R_7(g_2) = e_5. \quad R_7(g_3) = e_5.$$
$$R_8(g_2) = e_5^2. \quad R_8(g_3) = e_5.$$
$$R_9(g_2) = e_5^3. \quad R_9(g_3) = e_5.$$
$$R_{10}(g_2) = e_5^4. \quad R_{10}(g_3) = e_5.$$
$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = e_5^2.$$
$$R_{12}(g_2) = e_5. \quad R_{12}(g_3) = e_5^2.$$
$$R_{13}(g_2) = e_5^2. \quad R_{13}(g_3) = e_5^2.$$
$$R_{14}(g_2) = e_5^3. \quad R_{14}(g_3) = e_5^2.$$
$$R_{15}(g_2) = e_5^4. \quad R_{15}(g_3) = e_5^2.$$

$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_5^3.$$
$$R_{17}(g_2) = e_5. \quad R_{17}(g_3) = e_5^3.$$
$$R_{18}(g_2) = e_5^2. \quad R_{18}(g_3) = e_5^3.$$
$$R_{19}(g_2) = e_5^3. \quad R_{19}(g_3) = e_5^3.$$
$$R_{20}(g_2) = e_5^4. \quad R_{20}(g_3) = e_5^3.$$
$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = e_5^4.$$
$$R_{22}(g_2) = e_5. \quad R_{22}(g_3) = e_5^4.$$
$$R_{23}(g_2) = e_5^2. \quad R_{23}(g_3) = e_5^4.$$
$$R_{24}(g_2) = e_5^3. \quad R_{24}(g_3) = e_5^4.$$
$$R_{25}(g_2) = e_5^4. \quad R_{25}(g_3) = e_5^4.$$

2.26. **Order 26.** $G_{26}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = \begin{pmatrix} e_{13} + e_{13}^{12} & -1 \\ \alpha_{26,1} & -e_{13} - e_{13}^{12} \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} e_{13} + e_{13}^3 + e_{13}^{10} + e_{13}^{12} & \alpha_{26,1} \\ \alpha_{26,1} & -e_{13} - e_{13}^{12} \end{pmatrix}.$$

Constants:

$$\alpha_{26,1} \equiv -e_{13} - e_{13}^3 - e_{13}^4 - e_{13}^5 - e_{13}^6 - e_{13}^7 - e_{13}^8 - e_{13}^9 - e_{13}^{10} - e_{13}^{12}.$$

$$R_4(g_2) = \begin{pmatrix} -1 & e_{13}^5 + e_{13}^8 \\ 0 & 1 \end{pmatrix}.$$

$$R_4(g_3) = \begin{pmatrix} e_{13} + e_{13}^2 + e_{13}^4 + e_{13}^5 + e_{13}^8 + e_{13}^9 + e_{13}^{11} + e_{13}^{12} & e_{13} + e_{13}^2 + e_{13}^5 + e_{13}^8 + e_{13}^{11} + e_{13}^{12} \\ -e_{13} - e_{13}^2 - e_{13}^5 - e_{13}^8 - e_{13}^{11} - e_{13}^{12} & -e_{13} - e_{13}^2 - e_{13}^5 - e_{13}^8 - e_{13}^{11} - e_{13}^{12} \end{pmatrix}.$$

$$R_5(g_2) = \begin{pmatrix} \alpha_{26,2} & e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 \\ -e_{13}^6 - e_{13}^7 & -\alpha_{26,2} \end{pmatrix}. \quad R_5(g_3) = \begin{pmatrix} e_{13}^6 + e_{13}^7 & -1 \\ 1 & 0 \end{pmatrix}.$$

Constants:

$$\alpha_{26,2} \equiv e_{13}^2 + e_{13}^3 + e_{13}^4 + e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 + e_{13}^9 + e_{13}^{10} + e_{13}^{11}.$$

$$R_6(g_2) = \begin{pmatrix} \alpha_{26,3} & e_{13}^2 + e_{13}^6 + e_{13}^7 + e_{13}^{11} \\ -e_{13}^2 - e_{13}^{11} & -\alpha_{26,3} \end{pmatrix}.$$

$$R_6(g_3) = \begin{pmatrix} e_{13} + e_{13}^2 + e_{13}^3 + e_{13}^6 + e_{13}^7 + e_{13}^{10} + e_{13}^{11} + e_{13}^{12} & e_{13}^2 + e_{13}^3 + e_{13}^6 + e_{13}^7 + e_{13}^{10} + e_{13}^{11} \\ -e_{13}^2 - e_{13}^3 - e_{13}^6 - e_{13}^7 - e_{13}^{10} - e_{13}^{11} & -e_{13}^2 - e_{13}^3 - e_{13}^6 - e_{13}^7 - e_{13}^{10} - e_{13}^{11} \end{pmatrix}.$$

Constants:

$$\alpha_{26,3} \equiv e_{13} + e_{13}^2 + e_{13}^3 + e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 + e_{13}^{10} + e_{13}^{11} + e_{13}^{12}.$$

$$R_7(g_2) = \begin{pmatrix} \alpha_{26,4} & e_{13} + e_{13}^3 + e_{13}^5 + e_{13}^8 + e_{13}^{10} + e_{13}^{12} \\ -e_{13} - e_{13}^3 - e_{13}^{10} - e_{13}^{12} & -\alpha_{26,4} \end{pmatrix}.$$

$$R_7(g_3) = \begin{pmatrix} e_{13} + e_{13}^3 + e_{13}^5 + e_{13}^8 + e_{13}^{10} + e_{13}^{12} & \alpha_{26,4} \\ -\alpha_{26,4} & -e_{13} - e_{13}^3 - e_{13}^{10} - e_{13}^{12} \end{pmatrix}.$$

Constants:

$$\alpha_{26,4} \equiv e_{13} + e_{13}^3 + e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 + e_{13}^{10} + e_{13}^{12}.$$

$$R_8(g_2) = \begin{pmatrix} -e_{13} - e_{13}^4 - e_{13}^6 - e_{13}^7 - e_{13}^9 - e_{13}^{12} & -e_{13} - e_{13}^4 - e_{13}^6 - e_{13}^7 - e_{13}^9 - e_{13}^{12} \\ e_{13} + e_{13}^2 + e_{13}^4 + e_{13}^6 + e_{13}^7 + e_{13}^9 + e_{13}^{11} + e_{13}^{12} & e_{13} + e_{13}^4 + e_{13}^6 + e_{13}^7 + e_{13}^9 + e_{13}^{12} \end{pmatrix}.$$

$$R_8(g_3) = \begin{pmatrix} e_{13} + e_{13}^2 + e_{13}^4 + e_{13}^6 + e_{13}^7 + e_{13}^9 + e_{13}^{11} + e_{13}^{12} & e_{13} + e_{13}^4 + e_{13}^6 + e_{13}^7 + e_{13}^9 + e_{13}^{12} \\ -e_{13} - e_{13}^4 - e_{13}^6 - e_{13}^7 - e_{13}^9 - e_{13}^{12} & -e_{13} - e_{13}^4 - e_{13}^6 - e_{13}^7 - e_{13}^9 - e_{13}^{12} \end{pmatrix}.$$

$G_{26}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_{13}^{12}.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_{13}^{11}.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = e_{13}^{10}.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = e_{13}^{9}.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = e_{13}^{8}.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = e_{13}^{7}.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = e_{13}^{6}.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_{13}^{5}.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = e_{13}^{4}.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = e_{13}^{3}.$$
$$R_{13}(g_2) = -1. \quad R_{13}(g_3) = e_{13}^{2}.$$
$$R_{14}(g_2) = -1. \quad R_{14}(g_3) = e_{13}.$$
$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = e_{13}^{12}.$$
$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_{13}^{11}.$$
$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = e_{13}^{10}.$$
$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = e_{13}^{9}.$$
$$R_{19}(g_2) = 1. \quad R_{19}(g_3) = e_{13}^{8}.$$
$$R_{20}(g_2) = 1. \quad R_{20}(g_3) = e_{13}^{7}.$$
$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = e_{13}^{6}.$$
$$R_{22}(g_2) = 1. \quad R_{22}(g_3) = e_{13}^{5}.$$
$$R_{23}(g_2) = 1. \quad R_{23}(g_3) = e_{13}^{4}.$$
$$R_{24}(g_2) = 1. \quad R_{24}(g_3) = e_{13}^{3}.$$
$$R_{25}(g_2) = 1. \quad R_{25}(g_3) = e_{13}^{2}.$$
$$R_{26}(g_2) = 1. \quad R_{26}(g_3) = e_{13}.$$

2.27. **Order 27.** $G_{27}^{(1)}$

$$R_2(g_2) = e_3^2. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = e_3. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = -e_9^2 - e_9^5. \quad R_4(g_3) = e_3^2. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = -e_9^4 - e_9^7. \quad R_5(g_3) = e_3. \quad R_5(g_4) = 1.$$
$$R_6(g_2) = e_9^7. \quad R_6(g_3) = e_3. \quad R_6(g_4) = 1.$$
$$R_7(g_2) = e_9^5. \quad R_7(g_3) = e_3^2. \quad R_7(g_4) = 1.$$
$$R_8(g_2) = e_9^4. \quad R_8(g_3) = e_3. \quad R_8(g_4) = 1.$$
$$R_9(g_2) = e_9^2. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = 1.$$
$$R_{10}(g_2) = -e_{27}^5 - e_{27}^{14}. \quad R_{10}(g_3) = e_9^5. \quad R_{10}(g_4) = e_3^2.$$
$$R_{11}(g_2) = -e_{27}^7 - e_{27}^{16}. \quad R_{11}(g_3) = e_9^7. \quad R_{11}(g_4) = e_3.$$
$$R_{12}(g_2) = -e_{27}^8 - e_{27}^{17}. \quad R_{12}(g_3) = -e_9^2 - e_9^5. \quad R_{12}(g_4) = e_3^2.$$
$$R_{13}(g_2) = -e_{27}^{10} - e_{27}^{19}. \quad R_{13}(g_3) = -e_9^4 - e_9^7. \quad R_{13}(g_4) = e_3.$$
$$R_{14}(g_2) = -e_{27}^{11} - e_{27}^{20}. \quad R_{14}(g_3) = e_9^2. \quad R_{14}(g_4) = e_3^2.$$
$$R_{15}(g_2) = -e_{27}^{13} - e_{27}^{22}. \quad R_{15}(g_3) = e_9^4. \quad R_{15}(g_4) = e_3.$$
$$R_{16}(g_2) = e_{27}^{22}. \quad R_{16}(g_3) = e_9^4. \quad R_{16}(g_4) = e_3.$$
$$R_{17}(g_2) = e_{27}^{20}. \quad R_{17}(g_3) = e_9^2. \quad R_{17}(g_4) = e_3^2.$$
$$R_{18}(g_2) = e_{27}^{19}. \quad R_{18}(g_3) = -e_9^4 - e_9^7. \quad R_{18}(g_4) = e_3.$$
$$R_{19}(g_2) = e_{27}^{17}. \quad R_{19}(g_3) = -e_9^2 - e_9^5. \quad R_{19}(g_4) = e_3^2.$$
$$R_{20}(g_2) = e_{27}^{16}. \quad R_{20}(g_3) = e_9^7. \quad R_{20}(g_4) = e_3.$$
$$R_{21}(g_2) = e_{27}^{14}. \quad R_{21}(g_3) = e_9^5. \quad R_{21}(g_4) = e_3^2.$$
$$R_{22}(g_2) = e_{27}^{13}. \quad R_{22}(g_3) = e_9^4. \quad R_{22}(g_4) = e_3.$$
$$R_{23}(g_2) = e_{27}^{11}. \quad R_{23}(g_3) = e_9^2. \quad R_{23}(g_4) = e_3^2.$$
$$R_{24}(g_2) = e_{27}^{10}. \quad R_{24}(g_3) = -e_9^4 - e_9^7. \quad R_{24}(g_4) = e_3.$$
$$R_{25}(g_2) = e_{27}^{8}. \quad R_{25}(g_3) = -e_9^2 - e_9^5. \quad R_{25}(g_4) = e_3^2.$$
$$R_{26}(g_2) = e_{27}^7. \quad R_{26}(g_3) = e_9^7. \quad R_{26}(g_4) = e_3.$$
$$R_{27}(g_2) = e_{27}^5. \quad R_{27}(g_3) = e_9^5. \quad R_{27}(g_4) = e_3^2.$$

$G_{27}^{(2)}$

$$R_2(g_2) = 1. \quad R_2(g_3) = e_3^2. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = 1. \quad R_3(g_3) = e_3. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = e_3^2. \quad R_4(g_3) = 1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = e_3. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1.$$
$$R_6(g_2) = e_3^2. \quad R_6(g_3) = e_3^2. \quad R_6(g_4) = 1.$$
$$R_7(g_2) = e_3. \quad R_7(g_3) = e_3. \quad R_7(g_4) = 1.$$
$$R_8(g_2) = e_3^2. \quad R_8(g_3) = e_3. \quad R_8(g_4) = 1.$$
$$R_9(g_2) = e_3. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = 1.$$
$$R_{10}(g_2) = -e_9^2 - e_9^5. \quad R_{10}(g_3) = 1. \quad R_{10}(g_4) = e_3^2.$$
$$R_{11}(g_2) = -e_9^4 - e_9^7. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_3.$$
$$R_{12}(g_2) = e_9^7. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3.$$
$$R_{13}(g_2) = e_9^5. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = e_3^2.$$

$$R_{14}(g_2)=e_9^4.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=e_3.$$
$$R_{15}(g_2)=e_9^2.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=e_3^2.$$
$$R_{16}(g_2)=-e_9^2-e_9^5.\quad R_{16}(g_3)=e_3^2.\quad R_{16}(g_4)=e_3^2.$$
$$R_{17}(g_2)=-e_9^4-e_9^7.\quad R_{17}(g_3)=e_3.\quad R_{17}(g_4)=e_3.$$
$$R_{18}(g_2)=e_9^7.\quad R_{18}(g_3)=e_3.\quad R_{18}(g_4)=e_3.$$
$$R_{19}(g_2)=e_9^5.\quad R_{19}(g_3)=e_3^2.\quad R_{19}(g_4)=e_3^2.$$
$$R_{20}(g_2)=e_9^4.\quad R_{20}(g_3)=e_3.\quad R_{20}(g_4)=e_3.$$
$$R_{21}(g_2)=e_9^2.\quad R_{21}(g_3)=e_3^2.\quad R_{21}(g_4)=e_3^2.$$
$$R_{22}(g_2)=-e_9^2-e_9^5.\quad R_{22}(g_3)=e_3.\quad R_{22}(g_4)=e_3^2.$$
$$R_{23}(g_2)=-e_9^4-e_9^7.\quad R_{23}(g_3)=e_3^2.\quad R_{23}(g_4)=e_3.$$
$$R_{24}(g_2)=e_9^7.\quad R_{24}(g_3)=e_3^2.\quad R_{24}(g_4)=e_3.$$
$$R_{25}(g_2)=e_9^5.\quad R_{25}(g_3)=e_3.\quad R_{25}(g_4)=e_3^2.$$
$$R_{26}(g_2)=e_9^4.\quad R_{26}(g_3)=e_3^2.\quad R_{26}(g_4)=e_3.$$
$$R_{27}(g_2)=e_9^2.\quad R_{27}(g_3)=e_3.\quad R_{27}(g_4)=e_3^2.$$

$G_{27}^{(3)}$

$$R_2(g_2)=1.\quad R_2(g_3)=e_3^2.\quad R_2(g_4)=1.$$
$$R_3(g_2)=1.\quad R_3(g_3)=e_3.\quad R_3(g_4)=1.$$
$$R_4(g_2)=e_3^2.\quad R_4(g_3)=1.\quad R_4(g_4)=1.$$
$$R_5(g_2)=e_3.\quad R_5(g_3)=1.\quad R_5(g_4)=1.$$
$$R_6(g_2)=e_3^2.\quad R_6(g_3)=e_3^2.\quad R_6(g_4)=1.$$
$$R_7(g_2)=e_3.\quad R_7(g_3)=e_3.\quad R_7(g_4)=1.$$
$$R_8(g_2)=e_3^2.\quad R_8(g_3)=e_3.\quad R_8(g_4)=1.$$
$$R_9(g_2)=e_3.\quad R_9(g_3)=e_3^2.\quad R_9(g_4)=1.$$
$$R_{10}(g_2)=\begin{pmatrix}1&0&0\\0&e_3&0\\0&0&e_3^2\end{pmatrix}.\quad R_{10}(g_3)=\begin{pmatrix}0&0&e_3\\e_3^2&0&0\\0&1&0\end{pmatrix}.\quad R_{10}(g_4)=\begin{pmatrix}e_3^2&0&0\\0&e_3^2&0\\0&0&e_3^2\end{pmatrix}.$$
$$R_{11}(g_2)=\begin{pmatrix}1&0&0\\0&e_3&0\\0&0&e_3^2\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix}0&e_3^2&0\\0&0&1\\e_3&0&0\end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix}e_3&0&0\\0&e_3&0\\0&0&e_3\end{pmatrix}.$$

$G_{27}^{(4)}$

$$R_2(g_2)=1.\quad R_2(g_3)=e_3^2.\quad R_2(g_4)=1.$$
$$R_3(g_2)=1.\quad R_3(g_3)=e_3.\quad R_3(g_4)=1.$$
$$R_4(g_2)=e_3^2.\quad R_4(g_3)=1.\quad R_4(g_4)=1.$$
$$R_5(g_2)=e_3.\quad R_5(g_3)=1.\quad R_5(g_4)=1.$$
$$R_6(g_2)=e_3^2.\quad R_6(g_3)=e_3^2.\quad R_6(g_4)=1.$$
$$R_7(g_2)=e_3.\quad R_7(g_3)=e_3.\quad R_7(g_4)=1.$$
$$R_8(g_2)=e_3^2.\quad R_8(g_3)=e_3.\quad R_8(g_4)=1.$$
$$R_9(g_2)=e_3.\quad R_9(g_3)=e_3^2.\quad R_9(g_4)=1.$$
$$R_{10}(g_2)=\begin{pmatrix}-e_9^2-e_9^5&0&0\\0&e_9^5&0\\0&0&e_9^2\end{pmatrix}.\quad R_{10}(g_3)=\begin{pmatrix}0&-e_9^4-e_9^7&0\\0&0&e_3^2\\e_9^2&0&0\end{pmatrix}.\quad R_{10}(g_4)=\begin{pmatrix}e_3^2&0&0\\0&e_3^2&0\\0&0&e_3^2\end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} -e_9^4 - e_9^7 & 0 & 0 \\ 0 & e_9^7 & 0 \\ 0 & 0 & e_9^4 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} 0 & 0 & -e_9^2 - e_9^5 \\ e_9^5 & 0 & 0 \\ 0 & e_9^5 & 0 \end{pmatrix}. \quad R_{11}(g_4) = \begin{pmatrix} e_3 & 0 & 0 \\ 0 & e_3 & 0 \\ 0 & 0 & e_3 \end{pmatrix}.$$

$G_{27}^{(5)}$

$$R_2(g_2) = 1. \quad R_2(g_3) = 1. \quad R_2(g_4) = e_3^2.$$
$$R_3(g_2) = 1. \quad R_3(g_3) = 1. \quad R_3(g_4) = e_3.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = e_3^2. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = 1. \quad R_5(g_3) = e_3. \quad R_5(g_4) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = e_3^2. \quad R_6(g_4) = e_3^2.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = e_3. \quad R_7(g_4) = e_3.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = e_3^2. \quad R_8(g_4) = e_3.$$
$$R_9(g_2) = 1. \quad R_9(g_3) = e_3. \quad R_9(g_4) = e_3^2.$$
$$R_{10}(g_2) = e_3^2. \quad R_{10}(g_3) = 1. \quad R_{10}(g_4) = 1.$$
$$R_{11}(g_2) = e_3. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = 1.$$
$$R_{12}(g_2) = e_3^2. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3^2.$$
$$R_{13}(g_2) = e_3. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = e_3.$$
$$R_{14}(g_2) = e_3^2. \quad R_{14}(g_3) = 1. \quad R_{14}(g_4) = e_3.$$
$$R_{15}(g_2) = e_3. \quad R_{15}(g_3) = 1. \quad R_{15}(g_4) = e_3^2.$$
$$R_{16}(g_2) = e_3^2. \quad R_{16}(g_3) = e_3^2. \quad R_{16}(g_4) = 1.$$
$$R_{17}(g_2) = e_3. \quad R_{17}(g_3) = e_3. \quad R_{17}(g_4) = 1.$$
$$R_{18}(g_2) = e_3^2. \quad R_{18}(g_3) = e_3^2. \quad R_{18}(g_4) = e_3^2.$$
$$R_{19}(g_2) = e_3. \quad R_{19}(g_3) = e_3. \quad R_{19}(g_4) = e_3.$$
$$R_{20}(g_2) = e_3^2. \quad R_{20}(g_3) = e_3^2. \quad R_{20}(g_4) = e_3.$$
$$R_{21}(g_2) = e_3. \quad R_{21}(g_3) = e_3. \quad R_{21}(g_4) = e_3^2.$$
$$R_{22}(g_2) = e_3^2. \quad R_{22}(g_3) = e_3. \quad R_{22}(g_4) = 1.$$
$$R_{23}(g_2) = e_3. \quad R_{23}(g_3) = e_3^2. \quad R_{23}(g_4) = 1.$$
$$R_{24}(g_2) = e_3^2. \quad R_{24}(g_3) = e_3. \quad R_{24}(g_4) = e_3^2.$$
$$R_{25}(g_2) = e_3. \quad R_{25}(g_3) = e_3^2. \quad R_{25}(g_4) = e_3.$$
$$R_{26}(g_2) = e_3^2. \quad R_{26}(g_3) = e_3. \quad R_{26}(g_4) = e_3.$$
$$R_{27}(g_2) = e_3. \quad R_{27}(g_3) = e_3^2. \quad R_{27}(g_4) = e_3^2.$$

2.28. **Order 28.** $G_{28}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-i.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.$$
$$R_4(g_2)=i.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.$$
$$R_5(g_2)=-i\phi.\quad R_5(g_3)=-\epsilon.\quad R_5(g_4)=\begin{pmatrix}-2c_{1/7} & 1\\ -1 & 0\end{pmatrix}.$$
$$R_6(g_2)=\begin{pmatrix}-e_{28}^{19}-e_{28}^{23} & e_{28}^{15}+e_{28}^{19}+e_{28}^{23}+e_{28}^{27}\\ i & e_{28}^{19}+e_{28}^{23}\end{pmatrix}.$$
$$R_6(g_3)=-\epsilon.$$
$$R_6(g_4)=\begin{pmatrix}-2(c_{1/7}+c_{3/7}) & 2(c_{1/7}+c_{3/7})\\ -2(c_{1/7}+c_{3/7}) & 2c_{1/7}\end{pmatrix}.$$
$$R_7(g_2)=\begin{pmatrix}-i & 2c_{2/7}\\ 0 & i\end{pmatrix}.\quad R_7(g_3)=-\epsilon.\quad R_7(g_4)=\begin{pmatrix}0 & -i\\ -i & 2c_{2/7}\end{pmatrix}.$$
$$R_8(g_2)=\begin{pmatrix}1 & 0\\ -2c_{1/7} & -1\end{pmatrix}.\quad R_8(g_3)=\epsilon.\quad R_8(g_4)=\begin{pmatrix}0 & 1\\ -1 & -2c_{1/7}\end{pmatrix}.$$
$$R_9(g_2)=\phi.\quad R_9(g_3)=\epsilon.\quad R_9(g_4)=\begin{pmatrix}-2(c_{1/7}+c_{3/7}) & -2(c_{1/7}+c_{3/7})\\ 2(c_{1/7}+c_{3/7}) & 2c_{1/7}\end{pmatrix}.$$
$$R_{10}(g_2)=\begin{pmatrix}2\Re e_{14}^3 & 1-2\Re e_{14}\\ -1 & -2\Re e_{14}^3\end{pmatrix}.\quad R_{10}(g_3)=\epsilon.\quad R_{10}(g_4)=\begin{pmatrix}2\Re e_{14}-1 & 2\Re e_{14}-1\\ 1-2\Re e_{14} & 2\Re e_{14}^3\end{pmatrix}.$$

$G_{28}^{(2)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_7^6.\quad R_3(g_4)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_7^5.\quad R_4(g_4)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=e_7^4.\quad R_5(g_4)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=e_7^3.\quad R_6(g_4)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=e_7^2.\quad R_7(g_4)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=e_7.\quad R_8(g_4)=1.$$
$$R_9(g_2)=1.\quad R_9(g_3)=e_7^6.\quad R_9(g_4)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=e_7^5.\quad R_{10}(g_4)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=e_7^4.\quad R_{11}(g_4)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=e_7^3.\quad R_{12}(g_4)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=e_7^2.\quad R_{13}(g_4)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=e_7.\quad R_{14}(g_4)=1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=-1.$$
$$R_{17}(g_2)=-i.\quad R_{17}(g_3)=e_7^6.\quad R_{17}(g_4)=-1.$$
$$R_{18}(g_2)=-i.\quad R_{18}(g_3)=e_7^5.\quad R_{18}(g_4)=-1.$$
$$R_{19}(g_2)=-i.\quad R_{19}(g_3)=e_7^4.\quad R_{19}(g_4)=-1.$$
$$R_{20}(g_2)=-i.\quad R_{20}(g_3)=e_7^3.\quad R_{20}(g_4)=-1.$$

$$R_{21}(g_2) = -i. \quad R_{21}(g_3) = e_7^2. \quad R_{21}(g_4) = -1.$$
$$R_{22}(g_2) = -i. \quad R_{22}(g_3) = e_7. \quad R_{22}(g_4) = -1.$$
$$R_{23}(g_2) = i. \quad R_{23}(g_3) = e_7^6. \quad R_{23}(g_4) = -1.$$
$$R_{24}(g_2) = i. \quad R_{24}(g_3) = e_7^5. \quad R_{24}(g_4) = -1.$$
$$R_{25}(g_2) = i. \quad R_{25}(g_3) = e_7^4. \quad R_{25}(g_4) = -1.$$
$$R_{26}(g_2) = i. \quad R_{26}(g_3) = e_7^3. \quad R_{26}(g_4) = -1.$$
$$R_{27}(g_2) = i. \quad R_{27}(g_3) = e_7^2. \quad R_{27}(g_4) = -1.$$
$$R_{28}(g_2) = i. \quad R_{28}(g_3) = e_7. \quad R_{28}(g_4) = -1.$$

$G_{28}^{(3)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = \begin{pmatrix} -2(c_{1/7}+c_{3/7}) & -2(c_{1/7}+c_{3/7}) \\ 2c_{1/7} & 2(c_{1/7}+c_{3/7}) \end{pmatrix}. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \begin{pmatrix} -2c_{1/7} & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_6(g_2) = \begin{pmatrix} -2c_{2/7} & 2(c_{1/7}-c_{2/7}) \\ -1 & 2c_{2/7} \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \begin{pmatrix} -1 & 2c_{2/7} \\ -2c_{2/7} & 2(c_{1/7}-c_{2/7}) \end{pmatrix}.$$
$$R_7(g_2) = \begin{pmatrix} 2c_{2/7} & -1 \\ 2(c_{1/7}-c_{2/7}) & -2c_{2/7} \end{pmatrix}. \quad R_7(g_3) = -\epsilon. \quad R_7(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & 2c_{2/7} \end{pmatrix}.$$
$$R_8(g_2) = \phi. \quad R_8(g_3) = \epsilon. \quad R_8(g_4) = \begin{pmatrix} 2(c_{2/7}-c_{1/7}) & 2(c_{2/7}-c_{1/7}) \\ 2(c_{1/7}-c_{2/7}) & -2c_{2/7} \end{pmatrix}.$$
$$R_9(g_2) = \begin{pmatrix} -2c_{2/7} & 2(c_{1/7}-c_{2/7}) \\ -1 & 2c_{2/7} \end{pmatrix}. \quad R_9(g_3) = \epsilon. \quad R_9(g_4) = \begin{pmatrix} 2(c_{1/7}-c_{2/7}) & -2c_{2/7} \\ 2c_{2/7} & -1 \end{pmatrix}.$$
$$R_{10}(g_2) = \begin{pmatrix} -1 & -2\Re e_{14}^3 \\ 0 & 1 \end{pmatrix}. \quad R_{10}(g_3) = \epsilon. \quad R_{10}(g_4) = \begin{pmatrix} 2\Re e_{14}-1 & 2\Re e_{14}-1 \\ 1-2\Re e_{14} & 2\Re e_{14}^3 \end{pmatrix}.$$

$G_{28}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_7^6.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_7^5.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = -1. \quad R_7(g_4) = e_7^4.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = -1. \quad R_8(g_4) = e_7^3.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = -1. \quad R_9(g_4) = e_7^2.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = e_7.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_7^6.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_7^5.$$
$$R_{13}(g_2) = -1. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = e_7^4.$$
$$R_{14}(g_2) = -1. \quad R_{14}(g_3) = 1. \quad R_{14}(g_4) = e_7^3.$$
$$R_{15}(g_2) = -1. \quad R_{15}(g_3) = 1. \quad R_{15}(g_4) = e_7^2.$$
$$R_{16}(g_2) = -1. \quad R_{16}(g_3) = 1. \quad R_{16}(g_4) = e_7.$$

$$R_{17}(g_2)=1.\quad R_{17}(g_3)=-1.\quad R_{17}(g_4)=e_7^6.$$
$$R_{18}(g_2)=1.\quad R_{18}(g_3)=-1.\quad R_{18}(g_4)=e_7^5.$$
$$R_{19}(g_2)=1.\quad R_{19}(g_3)=-1.\quad R_{19}(g_4)=e_7^4.$$
$$R_{20}(g_2)=1.\quad R_{20}(g_3)=-1.\quad R_{20}(g_4)=e_7^3.$$
$$R_{21}(g_2)=1.\quad R_{21}(g_3)=-1.\quad R_{21}(g_4)=e_7^2.$$
$$R_{22}(g_2)=1.\quad R_{22}(g_3)=-1.\quad R_{22}(g_4)=e_7.$$
$$R_{23}(g_2)=1.\quad R_{23}(g_3)=1.\quad R_{23}(g_4)=e_7^6.$$
$$R_{24}(g_2)=1.\quad R_{24}(g_3)=1.\quad R_{24}(g_4)=e_7^5.$$
$$R_{25}(g_2)=1.\quad R_{25}(g_3)=1.\quad R_{25}(g_4)=e_7^4.$$
$$R_{26}(g_2)=1.\quad R_{26}(g_3)=1.\quad R_{26}(g_4)=e_7^3.$$
$$R_{27}(g_2)=1.\quad R_{27}(g_3)=1.\quad R_{27}(g_4)=e_7^2.$$
$$R_{28}(g_2)=1.\quad R_{28}(g_3)=1.\quad R_{28}(g_4)=e_7.$$

2.29. **Order 29.** $G_{29}^{(1)}$

$$R_j(g_2)=e_{29}^{j-1},\quad j=1\ldots,29.$$

2.30. **Order 30.** $G_{30}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_5^4.\quad R_3(g_4)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_5^3.\quad R_4(g_4)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=e_5^2.\quad R_5(g_4)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=e_5.\quad R_6(g_4)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=e_5^4.\quad R_7(g_4)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=e_5^3.\quad R_8(g_4)=1.$$
$$R_9(g_2)=1.\quad R_9(g_3)=e_5^2.\quad R_9(g_4)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=e_5.\quad R_{10}(g_4)=1.$$
$$R_{11}(g_2)=\phi.\quad R_{11}(g_3)=\epsilon.\quad R_{11}(g_4)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}-1&-e_5\\0&1\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix}e_5^2&0\\0&e_5^2\end{pmatrix}.\quad R_{12}(g_4)=\begin{pmatrix}-1&-e_5\\e_5^4&0\end{pmatrix}.$$
$$R_{13}(g_2)=\begin{pmatrix}-1&-1\\0&1\end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix}e_5&0\\0&e_5\end{pmatrix}.\quad R_{13}(g_4)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$
$$R_{14}(g_2)=\begin{pmatrix}0&e_5^2\\e_5^3&0\end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix}e_5^4&0\\0&e_5^4\end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix}-1&-e_5^2\\e_5^3&0\end{pmatrix}.$$
$$R_{15}(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_{15}(g_3)=\begin{pmatrix}e_5^3&0\\0&e_5^3\end{pmatrix}.\quad R_{15}(g_4)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.$$

$G_{30}^{(2)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_3^2.\quad R_5(g_4)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.$$
$$R_7(g_2)=\begin{pmatrix}-2\Re e_5 & -2\Re e_5\\ -1 & 2\Re e_5\end{pmatrix}.\quad R_7(g_3)=\epsilon.\quad R_7(g_4)=\begin{pmatrix}0 & 1\\ -1 & 2\Re e_5\end{pmatrix}.$$
$$R_8(g_2)=\begin{pmatrix}2\Re e_5 & -1\\ -2\Re e_5 & -2\Re e_5\end{pmatrix}.\quad R_8(g_3)=\epsilon.\quad R_8(g_4)=\begin{pmatrix}-1 & 2\Re e_5\\ -2\Re e_5 & -2\Re e_5\end{pmatrix}.$$
$$R_9(g_2)=\begin{pmatrix}-\varphi & -\varphi\\ -1 & \varphi\end{pmatrix}.\quad R_9(g_3)=\begin{pmatrix}e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_9(g_4)=\begin{pmatrix}-\varphi & -\varphi\\ \varphi & -1\end{pmatrix}.$$
$$R_{10}(g_2)=\begin{pmatrix}2\Re e_5 & -e_3\\ -e_{15}^7-e_{15}^{13} & -2\Re e_5\end{pmatrix}.\quad R_{10}(g_3)=\begin{pmatrix}e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{10}(g_4)=\begin{pmatrix}0 & e_3\\ -e_3^2 & 2\Re e_5\end{pmatrix}.$$
$$R_{11}(g_2)=\begin{pmatrix}0 & e_3^2\\ e_3 & 0\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix}e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix}\varphi & -e_3^2\\ e_3 & 0\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}1 & 0\\ e_{15}^{11}+e_{15}^{14} & -1\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix}e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{12}(g_4)=\begin{pmatrix}0 & e_3^2\\ -e_3 & \varphi\end{pmatrix}.$$

$G_{30}^{(3)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.$$
$$R_3(g_2)=\begin{pmatrix}1 & 0\\ -1 & -1\end{pmatrix}.\quad R_3(g_3)=\begin{pmatrix}-1 & -1\\ 1 & 0\end{pmatrix}.\quad R_3(g_4)=\epsilon.$$
$$R_4(g_2)=\begin{pmatrix}\varphi & -1\\ -\varphi & -\varphi\end{pmatrix}.\quad R_4(g_3)=\epsilon.\quad R_4(g_4)=\begin{pmatrix}0 & 1\\ -1 & \varphi\end{pmatrix}.$$
$$R_5(g_2)=\begin{pmatrix}1 & 0\\ 2\Re e_5 & -1\end{pmatrix}.\quad R_5(g_3)=\epsilon.\quad R_5(g_4)=\begin{pmatrix}0 & 1\\ -1 & 2\Re e_5\end{pmatrix}.$$
$$R_6(g_2)=\begin{pmatrix}\alpha_{30,1} & \alpha_{30,2}\\ \alpha_{30,3} & -\alpha_{30,1}\end{pmatrix}.\quad R_6(g_3)=\begin{pmatrix}\alpha_{30,1} & \alpha_{30,2}\\ -\alpha_{30,2} & \alpha_{30,4}\end{pmatrix}.\quad R_6(g_4)=\begin{pmatrix}-e_{15}^7-e_{15}^8 & -\alpha_{30,3}\\ \alpha_{30,3} & -\alpha_{30,1}\end{pmatrix}.$$

Constants:

$$\alpha_{30,1}\equiv e_{15}+e_{15}^4-e_{15}^7-e_{15}^8+e_{15}^{11}+e_{15}^{14};$$
$$\alpha_{30,2}\equiv 2e_{15}+2e_{15}^2+e_{15}^4+e_{15}^7+e_{15}^8+e_{15}^{11}+2e_{15}^{13}+2e_{15}^{14};$$
$$\alpha_{30,3}\equiv -2e_{15}-e_{15}^2-e_{15}^4-e_{15}^7-e_{15}^8-e_{15}^{11}-e_{15}^{13}-2e_{15}^{14};$$
$$\alpha_{30,4}\equiv -2e_{15}-e_{15}^2-2e_{15}^4-2e_{15}^{11}-e_{15}^{13}-2e_{15}^{14}.$$

$$R_7(g_2)=\begin{pmatrix}e_{15}^7+e_{15}^8 & -1\\ -\alpha_{30,3} & -e_{15}^7-e_{15}^8\end{pmatrix}.\quad R_7(g_3)=\begin{pmatrix}\alpha_{30,4} & -\alpha_{30,2}\\ \alpha_{30,2} & \alpha_{30,1}\end{pmatrix}.\quad R_7(g_4)=\begin{pmatrix}-e_{15}^7-e_{15}^8 & -\alpha_{30,3}\\ \alpha_{30,3} & -\alpha_{30,1}\end{pmatrix}.$$
$$R_8(g_2)=\begin{pmatrix}\alpha_{30,5} & \alpha_{30,6}\\ \alpha_{30,7} & -\alpha_{30,5}\end{pmatrix}.\quad R_8(g_3)=\begin{pmatrix}\alpha_{30,8} & -\alpha_{30,6}\\ \alpha_{30,6} & \alpha_{30,5}\end{pmatrix}.\quad R_8(g_4)=\begin{pmatrix}-\alpha_{30,8} & \alpha_{30,9}\\ -\alpha_{30,9} & -e_{15}^4-e_{15}^{11}\end{pmatrix}.$$

Constants:

$$\alpha_{30,5}\equiv -e_{15}-2e_{15}^2-2e_{15}^7-2e_{15}^8-2e_{15}^{13}-e_{15}^{14};$$
$$\alpha_{30,6}\equiv -2e_{15}-e_{15}^2-e_{15}^4-2e_{15}^7-2e_{15}^8-e_{15}^{11}-e_{15}^{13}-2e_{15}^{14};$$
$$\alpha_{30,7}\equiv e_{15}+e_{15}^2+2e_{15}^7+2e_{15}^8+e_{15}^{13}+e_{15}^{14};$$
$$\alpha_{30,8}\equiv e_{15}^2-e_{15}^4+e_{15}^7+e_{15}^8-e_{15}^{11}+e_{15}^{13};$$

$$\alpha_{30,9} \equiv -e_{15} - e_{15}^2 - e_{15}^4 - 2e_{15}^7 - 2e_{15}^8 - e_{15}^{11} - e_{15}^{13} - e_{15}^{14}.$$

$$R_9(g_2) = \begin{pmatrix} \alpha_{30,10}/3 & \alpha_{30,11}/3 \\ \alpha_{30,12}/3 & -\alpha_{30,10}/3 \end{pmatrix}. \quad R_9(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_9(g_4) = \begin{pmatrix} \alpha_{30,11}/3 & \alpha_{30,10}/3 \\ -\alpha_{30,10}/3 & \alpha_{30,12}/3 \end{pmatrix}.$$

Constants:

$$\alpha_{30,10} \equiv -e_{15}^2 + e_{15}^7 + e_{15}^8 - e_{15}^{13};$$
$$\alpha_{30,11} \equiv -2e_{15}^2 - e_{15}^7 - e_{15}^8 - 2e_{15}^{13};$$
$$\alpha_{30,12} \equiv -e_{15}^2 - 2e_{15}^7 - 2e_{15}^8 - e_{15}^{13}.$$

$G_{30}^{(4)}$

$$\begin{array}{lll}
R_2(g_2) = -1. & R_2(g_3) = 1. & R_2(g_4) = 1. \\
R_3(g_2) = -1. & R_3(g_3) = 1. & R_3(g_4) = e_5^4. \\
R_4(g_2) = -1. & R_4(g_3) = 1. & R_4(g_4) = e_5^3. \\
R_5(g_2) = -1. & R_5(g_3) = 1. & R_5(g_4) = e_5^2. \\
R_6(g_2) = -1. & R_6(g_3) = 1. & R_6(g_4) = e_5. \\
R_7(g_2) = -1. & R_7(g_3) = e_3^2. & R_7(g_4) = 1. \\
R_8(g_2) = -1. & R_8(g_3) = e_3. & R_8(g_4) = 1. \\
R_9(g_2) = -1. & R_9(g_3) = e_3^2. & R_9(g_4) = e_5^4. \\
R_{10}(g_2) = -1. & R_{10}(g_3) = e_3^2. & R_{10}(g_4) = e_5^3. \\
R_{11}(g_2) = -1. & R_{11}(g_3) = e_3^2. & R_{11}(g_4) = e_5^2. \\
R_{12}(g_2) = -1. & R_{12}(g_3) = e_3^2. & R_{12}(g_4) = e_5. \\
R_{13}(g_2) = -1. & R_{13}(g_3) = e_3. & R_{13}(g_4) = e_5^4. \\
R_{14}(g_2) = -1. & R_{14}(g_3) = e_3. & R_{14}(g_4) = e_5^3. \\
R_{15}(g_2) = -1. & R_{15}(g_3) = e_3. & R_{15}(g_4) = e_5^2. \\
R_{16}(g_2) = -1. & R_{16}(g_3) = e_3. & R_{16}(g_4) = e_5. \\
R_{17}(g_2) = 1. & R_{17}(g_3) = 1. & R_{17}(g_4) = e_5^4. \\
R_{18}(g_2) = 1. & R_{18}(g_3) = 1. & R_{18}(g_4) = e_5^3. \\
R_{19}(g_2) = 1. & R_{19}(g_3) = 1. & R_{19}(g_4) = e_5^2. \\
R_{20}(g_2) = 1. & R_{20}(g_3) = 1. & R_{20}(g_4) = e_5. \\
R_{21}(g_2) = 1. & R_{21}(g_3) = e_3^2. & R_{21}(g_4) = 1. \\
R_{22}(g_2) = 1. & R_{22}(g_3) = e_3. & R_{22}(g_4) = 1. \\
R_{23}(g_2) = 1. & R_{23}(g_3) = e_3^2. & R_{23}(g_4) = e_5^4. \\
R_{24}(g_2) = 1. & R_{24}(g_3) = e_3^2. & R_{24}(g_4) = e_5^3. \\
R_{25}(g_2) = 1. & R_{25}(g_3) = e_3^2. & R_{25}(g_4) = e_5^2. \\
R_{26}(g_2) = 1. & R_{26}(g_3) = e_3^2. & R_{26}(g_4) = e_5. \\
R_{27}(g_2) = 1. & R_{27}(g_3) = e_3. & R_{27}(g_4) = e_5^4. \\
R_{28}(g_2) = 1. & R_{28}(g_3) = e_3. & R_{28}(g_4) = e_5^3. \\
R_{29}(g_2) = 1. & R_{29}(g_3) = e_3. & R_{29}(g_4) = e_5^2. \\
R_{30}(g_2) = 1. & R_{30}(g_3) = e_3. & R_{30}(g_4) = e_5.
\end{array}$$

2.31. **Order 31.** $G_{31}^{(1)}$

$$R_j(g_2) = e_{31}^{j-1}, \quad j = 1 \ldots, 31.$$

2.32. **Order 32.** $G_{32}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -e_8. \quad R_5(g_3) = i. \quad R_5(g_4) = -1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = -e_8^3. \quad R_6(g_3) = -i. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = e_8^3. \quad R_7(g_3) = -i. \quad R_7(g_4) = -1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = e_8. \quad R_8(g_3) = i. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = -e_{16}. \quad R_9(g_3) = e_8. \quad R_9(g_4) = i. \quad R_9(g_5) = -1. \quad R_9(g_6) = 1.$$
$$R_{10}(g_2) = -e_{16}^3. \quad R_{10}(g_3) = e_8^3. \quad R_{10}(g_4) = -i. \quad R_{10}(g_5) = -1. \quad R_{10}(g_6) = 1.$$
$$R_{11}(g_2) = -e_{16}^5. \quad R_{11}(g_3) = -e_8. \quad R_{11}(g_4) = i. \quad R_{11}(g_5) = -1. \quad R_{11}(g_6) = 1.$$
$$R_{12}(g_2) = -e_{16}^7. \quad R_{12}(g_3) = -e_8^3. \quad R_{12}(g_4) = -i. \quad R_{12}(g_5) = -1. \quad R_{12}(g_6) = 1.$$
$$R_{13}(g_2) = e_{16}^7. \quad R_{13}(g_3) = -e_8^3. \quad R_{13}(g_4) = -i. \quad R_{13}(g_5) = -1. \quad R_{13}(g_6) = 1.$$
$$R_{14}(g_2) = e_{16}^5. \quad R_{14}(g_3) = -e_8. \quad R_{14}(g_4) = i. \quad R_{14}(g_5) = -1. \quad R_{14}(g_6) = 1.$$
$$R_{15}(g_2) = e_{16}^3. \quad R_{15}(g_3) = e_8^3. \quad R_{15}(g_4) = -i. \quad R_{15}(g_5) = -1. \quad R_{15}(g_6) = 1.$$
$$R_{16}(g_2) = e_{16}. \quad R_{16}(g_3) = e_8. \quad R_{16}(g_4) = i. \quad R_{16}(g_5) = -1. \quad R_{16}(g_6) = 1.$$
$$R_{17}(g_2) = -e_{32}. \quad R_{17}(g_3) = e_{16}. \quad R_{17}(g_4) = e_8. \quad R_{17}(g_5) = i. \quad R_{17}(g_6) = -1.$$
$$R_{18}(g_2) = -e_{32}^3. \quad R_{18}(g_3) = e_{16}^3. \quad R_{18}(g_4) = e_8^3. \quad R_{18}(g_5) = -i. \quad R_{18}(g_6) = -1.$$
$$R_{19}(g_2) = -e_{32}^5. \quad R_{19}(g_3) = e_{16}^5. \quad R_{19}(g_4) = -e_8. \quad R_{19}(g_5) = i. \quad R_{19}(g_6) = -1.$$
$$R_{20}(g_2) = -e_{32}^7. \quad R_{20}(g_3) = e_{16}^7. \quad R_{20}(g_4) = -e_8^3. \quad R_{20}(g_5) = -i. \quad R_{20}(g_6) = -1.$$
$$R_{21}(g_2) = -e_{32}^9. \quad R_{21}(g_3) = -e_{16}. \quad R_{21}(g_4) = e_8. \quad R_{21}(g_5) = i. \quad R_{21}(g_6) = -1.$$
$$R_{22}(g_2) = -e_{32}^{11}. \quad R_{22}(g_3) = -e_{16}^3. \quad R_{22}(g_4) = e_8^3. \quad R_{22}(g_5) = -i. \quad R_{22}(g_6) = -1.$$
$$R_{23}(g_2) = -e_{32}^{13}. \quad R_{23}(g_3) = -e_{16}^5. \quad R_{23}(g_4) = -e_8. \quad R_{23}(g_5) = i. \quad R_{23}(g_6) = -1.$$
$$R_{24}(g_2) = -e_{32}^{15}. \quad R_{24}(g_3) = -e_{16}^7. \quad R_{24}(g_4) = -e_8^3. \quad R_{24}(g_5) = -i. \quad R_{24}(g_6) = -1.$$
$$R_{25}(g_2) = e_{32}^{15}. \quad R_{25}(g_3) = -e_{16}^7. \quad R_{25}(g_4) = -e_8^3. \quad R_{25}(g_5) = -i. \quad R_{25}(g_6) = -1.$$
$$R_{26}(g_2) = e_{32}^{13}. \quad R_{26}(g_3) = -e_{16}^5. \quad R_{26}(g_4) = -e_8. \quad R_{26}(g_5) = i. \quad R_{26}(g_6) = -1.$$
$$R_{27}(g_2) = e_{32}^{11}. \quad R_{27}(g_3) = -e_{16}^3. \quad R_{27}(g_4) = e_8^3. \quad R_{27}(g_5) = -i. \quad R_{27}(g_6) = -1.$$
$$R_{28}(g_2) = e_{32}^9. \quad R_{28}(g_3) = -e_{16}. \quad R_{28}(g_4) = e_8. \quad R_{28}(g_5) = i. \quad R_{28}(g_6) = -1.$$
$$R_{29}(g_2) = e_{32}^7. \quad R_{29}(g_3) = e_{16}^7. \quad R_{29}(g_4) = -e_8^3. \quad R_{29}(g_5) = -i. \quad R_{29}(g_6) = -1.$$
$$R_{30}(g_2) = e_{32}^5. \quad R_{30}(g_3) = e_{16}^5. \quad R_{30}(g_4) = -e_8. \quad R_{30}(g_5) = i. \quad R_{30}(g_6) = -1.$$
$$R_{31}(g_2) = e_{32}^3. \quad R_{31}(g_3) = e_{16}^3. \quad R_{31}(g_4) = e_8^3. \quad R_{31}(g_5) = -i. \quad R_{31}(g_6) = -1.$$
$$R_{32}(g_2) = e_{32}. \quad R_{32}(g_3) = e_{16}. \quad R_{32}(g_4) = e_8. \quad R_{32}(g_5) = i. \quad R_{32}(g_6) = -1.$$

$G_{32}^{(2)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-i.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=-1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=i.\quad R_6(g_4)=1.\quad R_6(g_5)=1.\quad R_6(g_6)=-1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-i.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=-1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=i.\quad R_8(g_4)=1.\quad R_8(g_5)=1.\quad R_8(g_6)=-1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=1.\quad R_9(g_5)=-1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=-1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=-i.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=-1.\quad R_{13}(g_6)=-1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=i.\quad R_{14}(g_4)=1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=-1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=i.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-1.\quad R_{15}(g_6)=-1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=-i.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=-1.$$
$$R_{17}(g_2)=-i\lambda.\quad R_{17}(g_3)=-i\phi.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=i\lambda.\quad R_{18}(g_3)=i\kappa.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=-\epsilon.\quad R_{18}(g_6)=\epsilon.$$
$$R_{19}(g_2)=-\lambda.\quad R_{19}(g_3)=\kappa.\quad R_{19}(g_4)=-\epsilon.\quad R_{19}(g_5)=\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=\lambda.\quad R_{20}(g_3)=\phi.\quad R_{20}(g_4)=-\epsilon.\quad R_{20}(g_5)=\epsilon.\quad R_{20}(g_6)=\epsilon.$$

$G_{32}^{(3)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-i.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=i.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-i.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=i.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=-1.\quad R_{12}(g_5)=1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=-i.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=-1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=i.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=i.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=-1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=-i.\quad R_{16}(g_4)=-1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$
$$R_{17}(g_2)=-e_8.\quad R_{17}(g_3)=-1.\quad R_{17}(g_4)=i.\quad R_{17}(g_5)=1.\quad R_{17}(g_6)=-1.$$
$$R_{18}(g_2)=-e_8^3.\quad R_{18}(g_3)=-1.\quad R_{18}(g_4)=-i.\quad R_{18}(g_5)=1.\quad R_{18}(g_6)=-1.$$
$$R_{19}(g_2)=e_8^3.\quad R_{19}(g_3)=-1.\quad R_{19}(g_4)=-i.\quad R_{19}(g_5)=1.\quad R_{19}(g_6)=-1.$$
$$R_{20}(g_2)=e_8.\quad R_{20}(g_3)=-1.\quad R_{20}(g_4)=i.\quad R_{20}(g_5)=1.\quad R_{20}(g_6)=-1.$$

$R_{21}(g_2) = -e_8.\quad R_{21}(g_3) = 1.\quad R_{21}(g_4) = i.\quad R_{21}(g_5) = 1.\quad R_{21}(g_6) = -1.$

$R_{22}(g_2) = -e_8^3.\quad R_{22}(g_3) = 1.\quad R_{22}(g_4) = -i.\quad R_{22}(g_5) = 1.\quad R_{22}(g_6) = -1.$

$R_{23}(g_2) = e_8^3.\quad R_{23}(g_3) = 1.\quad R_{23}(g_4) = -i.\quad R_{23}(g_5) = 1.\quad R_{23}(g_6) = -1.$

$R_{24}(g_2) = e_8.\quad R_{24}(g_3) = 1.\quad R_{24}(g_4) = i.\quad R_{24}(g_5) = 1.\quad R_{24}(g_6) = -1.$

$R_{25}(g_2) = -e_8.\quad R_{25}(g_3) = -i.\quad R_{25}(g_4) = i.\quad R_{25}(g_5) = -1.\quad R_{25}(g_6) = -1.$

$R_{26}(g_2) = -e_8^3.\quad R_{26}(g_3) = i.\quad R_{26}(g_4) = -i.\quad R_{26}(g_5) = -1.\quad R_{26}(g_6) = -1.$

$R_{27}(g_2) = e_8^3.\quad R_{27}(g_3) = i.\quad R_{27}(g_4) = -i.\quad R_{27}(g_5) = -1.\quad R_{27}(g_6) = -1.$

$R_{28}(g_2) = e_8.\quad R_{28}(g_3) = -i.\quad R_{28}(g_4) = i.\quad R_{28}(g_5) = -1.\quad R_{28}(g_6) = -1.$

$R_{29}(g_2) = -e_8.\quad R_{29}(g_3) = i.\quad R_{29}(g_4) = i.\quad R_{29}(g_5) = -1.\quad R_{29}(g_6) = -1.$

$R_{30}(g_2) = -e_8^3.\quad R_{30}(g_3) = -i.\quad R_{30}(g_4) = -i.\quad R_{30}(g_5) = -1.\quad R_{30}(g_6) = -1.$

$R_{31}(g_2) = e_8^3.\quad R_{31}(g_3) = -i.\quad R_{31}(g_4) = -i.\quad R_{31}(g_5) = -1.\quad R_{31}(g_6) = -1.$

$R_{32}(g_2) = e_8.\quad R_{32}(g_3) = i.\quad R_{32}(g_4) = i.\quad R_{32}(g_5) = -1.\quad R_{32}(g_6) = -1.$

$G_{32}^{(4)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = 1.\quad R_2(g_5) = 1.\quad R_2(g_6) = 1.$

$R_3(g_2) = -1.\quad R_3(g_3) = 1.\quad R_3(g_4) = 1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$

$R_4(g_2) = 1.\quad R_4(g_3) = -1.\quad R_4(g_4) = 1.\quad R_4(g_5) = 1.\quad R_4(g_6) = 1.$

$R_5(g_2) = -1.\quad R_5(g_3) = -i.\quad R_5(g_4) = 1.\quad R_5(g_5) = -1.\quad R_5(g_6) = 1.$

$R_6(g_2) = -1.\quad R_6(g_3) = i.\quad R_6(g_4) = 1.\quad R_6(g_5) = -1.\quad R_6(g_6) = 1.$

$R_7(g_2) = 1.\quad R_7(g_3) = -i.\quad R_7(g_4) = 1.\quad R_7(g_5) = -1.\quad R_7(g_6) = 1.$

$R_8(g_2) = 1.\quad R_8(g_3) = i.\quad R_8(g_4) = 1.\quad R_8(g_5) = -1.\quad R_8(g_6) = 1.$

$R_9(g_2) = -i.\quad R_9(g_3) = -1.\quad R_9(g_4) = -1.\quad R_9(g_5) = 1.\quad R_9(g_6) = 1.$

$R_{10}(g_2) = i.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = -1.\quad R_{10}(g_5) = 1.\quad R_{10}(g_6) = 1.$

$R_{11}(g_2) = -i.\quad R_{11}(g_3) = 1.\quad R_{11}(g_4) = -1.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = 1.$

$R_{12}(g_2) = i.\quad R_{12}(g_3) = 1.\quad R_{12}(g_4) = -1.\quad R_{12}(g_5) = 1.\quad R_{12}(g_6) = 1.$

$R_{13}(g_2) = -i.\quad R_{13}(g_3) = -i.\quad R_{13}(g_4) = -1.\quad R_{13}(g_5) = -1.\quad R_{13}(g_6) = 1.$

$R_{14}(g_2) = i.\quad R_{14}(g_3) = i.\quad R_{14}(g_4) = -1.\quad R_{14}(g_5) = -1.\quad R_{14}(g_6) = 1.$

$R_{15}(g_2) = -i.\quad R_{15}(g_3) = i.\quad R_{15}(g_4) = -1.\quad R_{15}(g_5) = -1.\quad R_{15}(g_6) = 1.$

$R_{16}(g_2) = i.\quad R_{16}(g_3) = -i.\quad R_{16}(g_4) = -1.\quad R_{16}(g_5) = -1.\quad R_{16}(g_6) = 1.$

$R_{17}(g_2) = \begin{pmatrix} -e_8^3 & 0 \\ 0 & e_8^3 \end{pmatrix}.\quad R_{17}(g_3) = \begin{pmatrix} 0 & -e_8^3 \\ -e_8 & 0 \end{pmatrix}.\quad R_{17}(g_4) = -i\epsilon.\quad R_{17}(g_5) = -\epsilon.\quad R_{17}(g_6) = -\epsilon.$

$R_{18}(g_2) = \begin{pmatrix} -e_8 & 0 \\ 0 & e_8 \end{pmatrix}.\quad R_{18}(g_3) = \begin{pmatrix} 0 & e_8 \\ e_8^3 & 0 \end{pmatrix}.\quad R_{18}(g_4) = i\epsilon.\quad R_{18}(g_5) = -\epsilon.\quad R_{18}(g_6) = -\epsilon.$

$R_{19}(g_2) = \begin{pmatrix} e_8^3 & 0 \\ 0 & -e_8^3 \end{pmatrix}.\quad R_{19}(g_3) = i\kappa.\quad R_{19}(g_4) = -i\epsilon.\quad R_{19}(g_5) = \epsilon.\quad R_{19}(g_6) = -\epsilon.$

$R_{20}(g_2) = \begin{pmatrix} -e_8 & 0 \\ 0 & e_8 \end{pmatrix}.\quad R_{20}(g_3) = \phi.\quad R_{20}(g_4) = i\epsilon.\quad R_{20}(g_5) = \epsilon.\quad R_{20}(g_6) = -\epsilon.$

$G_{32}^{(5)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = -e_8. \quad R_9(g_3) = -1. \quad R_9(g_4) = 1. \quad R_9(g_5) = i. \quad R_9(g_6) = -1.$$

$$R_{10}(g_2) = -e_8^3. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = 1. \quad R_{10}(g_5) = -i. \quad R_{10}(g_6) = -1.$$

$$R_{11}(g_2) = e_8^3. \quad R_{11}(g_3) = -1. \quad R_{11}(g_4) = 1. \quad R_{11}(g_5) = -i. \quad R_{11}(g_6) = -1.$$

$$R_{12}(g_2) = e_8. \quad R_{12}(g_3) = -1. \quad R_{12}(g_4) = 1. \quad R_{12}(g_5) = i. \quad R_{12}(g_6) = -1.$$

$$R_{13}(g_2) = -e_8. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = 1. \quad R_{13}(g_5) = i. \quad R_{13}(g_6) = -1.$$

$$R_{14}(g_2) = -e_8^3. \quad R_{14}(g_3) = 1. \quad R_{14}(g_4) = 1. \quad R_{14}(g_5) = -i. \quad R_{14}(g_6) = -1.$$

$$R_{15}(g_2) = e_8^3. \quad R_{15}(g_3) = 1. \quad R_{15}(g_4) = 1. \quad R_{15}(g_5) = -i. \quad R_{15}(g_6) = -1.$$

$$R_{16}(g_2) = e_8. \quad R_{16}(g_3) = 1. \quad R_{16}(g_4) = 1. \quad R_{16}(g_5) = i. \quad R_{16}(g_6) = -1.$$

$$R_{17}(g_2) = -i\lambda. \quad R_{17}(g_3) = \phi. \quad R_{17}(g_4) = -\epsilon. \quad R_{17}(g_5) = -\epsilon. \quad R_{17}(g_6) = \epsilon.$$

$$R_{18}(g_2) = \lambda. \quad R_{18}(g_3) = \phi. \quad R_{18}(g_4) = -\epsilon. \quad R_{18}(g_5) = \epsilon. \quad R_{18}(g_6) = \epsilon.$$

$$R_{19}(g_2) = \begin{pmatrix} -e_8^3 & 0 \\ 0 & e_8^3 \end{pmatrix}. \quad R_{19}(g_3) = \begin{pmatrix} 0 & e_8^3 \\ -e_8 & 0 \end{pmatrix}. \quad R_{19}(g_4) = -\epsilon. \quad R_{19}(g_5) = -i\epsilon. \quad R_{19}(g_6) = -\epsilon.$$

$$R_{20}(g_2) = \begin{pmatrix} e_8 & 0 \\ 0 & -e_8 \end{pmatrix}. \quad R_{20}(g_3) = \begin{pmatrix} 0 & e_8 \\ -e_8^3 & 0 \end{pmatrix}. \quad R_{20}(g_4) = -\epsilon. \quad R_{20}(g_5) = i\epsilon. \quad R_{20}(g_6) = -\epsilon.$$

$G_{32}^{(6)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = i\lambda. \quad R_9(g_3) = \phi. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$

$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = -\phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} 0 & 0 & -1 & 0 \\ 0 & -1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \\ -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}.$$

$$R_{11}(g_6) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}.$$

$G_{32}^{(7)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = i. \quad R_8(g_3) = 1. \quad R_8(g_4) = 1. \quad R_8(g_5) = -1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = -i\lambda. \quad R_9(g_3) = \phi. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$
$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = \phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} -e_8 & 0 & 0 & 0 \\ 0 & 0 & -i & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & e_8 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & e_8 \\ -1 & 0 & 0 & 0 \\ 0 & -e_8^3 & 0 & 0 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 0 & -e_8 & 0 \\ 0 & e_8^3 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} i & 0 & 0 & 0 \\ 0 & -i & 0 & 0 \\ 0 & 0 & -i & 0 \\ 0 & 0 & 0 & i \end{pmatrix}.$$

$$R_{11}(g_6) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}.$$

$G_{32}^{(8)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -i. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = -1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = i. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = -1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = -i. \quad R_7(g_3) = 1. \quad R_7(g_4) = 1. \quad R_7(g_5) = -1. \quad R_7(g_6) = 1.$$

$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$

$$R_9(g_2)=-i\lambda.\quad R_9(g_3)=\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$

$$R_{10}(g_2)=-\lambda.\quad R_{10}(g_3)=\phi.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} e_8 & 0 & 0 & 0\\ 0 & 0 & 1 & 0\\ 0 & -i & 0 & 0\\ 0 & 0 & 0 & -e_8\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} 0 & -i & 0 & 0\\ -i & 0 & 0 & 0\\ 0 & 0 & 0 & 1\\ 0 & 0 & -1 & 0\end{pmatrix}.$$

$$R_{11}(g_4)=\begin{pmatrix} 0 & 0 & 0 & e_8\\ 0 & 0 & -e_8^3 & 0\\ 0 & e_8 & 0 & 0\\ -e_8^3 & 0 & 0 & 0\end{pmatrix}.\quad R_{11}(g_5)=\begin{pmatrix} i & 0 & 0 & 0\\ 0 & -i & 0 & 0\\ 0 & 0 & -i & 0\\ 0 & 0 & 0 & i\end{pmatrix}.$$

$$R_{11}(g_6)=\begin{pmatrix} -1 & 0 & 0 & 0\\ 0 & -1 & 0 & 0\\ 0 & 0 & -1 & 0\\ 0 & 0 & 0 & -1\end{pmatrix}.$$

$G_{32}^{(9)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$

$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$

$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$

$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$

$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$

$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$

$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$

$$R_9(g_2)=i\lambda.\quad R_9(g_3)=\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$

$$R_{10}(g_2)=\lambda.\quad R_{10}(g_3)=\phi.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} -i & 0\\ \sqrt{2} & i\end{pmatrix}.\quad R_{11}(g_3)=-i\kappa.\quad R_{11}(g_4)=\begin{pmatrix} 1 & \sqrt{2}i\\ \sqrt{2}i & -1\end{pmatrix}.\quad R_{11}(g_5)=-\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=-i\phi.\quad R_{12}(g_3)=\begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2}\\ -1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_{12}(g_4)=\kappa.\quad R_{12}(g_5)=-\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix} -1 & \sqrt{2}\\ 0 & 1\end{pmatrix}.\quad R_{13}(g_3)=-\phi.\quad R_{13}(g_4)=\begin{pmatrix} -1 & \sqrt{2}\\ -\sqrt{2}i & 1\end{pmatrix}.\quad R_{13}(g_5)=\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=-\lambda.\quad R_{14}(g_3)=\begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2}\\ -1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_{14}(g_4)=-\kappa.\quad R_{14}(g_5)=\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(10)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=i\lambda.\quad R_9(g_3)=i\kappa.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=-\lambda.\quad R_{10}(g_3)=\phi.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$
$$R_{11}(g_2)=-\kappa.\quad R_{11}(g_3)=\begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2} \\ 1/\sqrt{2} & i/\sqrt{2} \end{pmatrix}.\quad R_{11}(g_4)=-i\phi.\quad R_{11}(g_5)=-\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=\begin{pmatrix} i & -\sqrt{2}i \\ 0 & -i \end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix} -\sqrt{2}i & i \\ -i & \sqrt{2}i \end{pmatrix}.\quad R_{12}(g_4)=\begin{pmatrix} 1 & -\sqrt{2}i \\ \sqrt{2} & -1 \end{pmatrix}.$$
$$R_{12}(g_5)=-\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix} -1 & \sqrt{2}i \\ 0 & 1 \end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix} \sqrt{2}i & 1 \\ 1 & -\sqrt{2}i \end{pmatrix}.\quad R_{13}(g_4)=\begin{pmatrix} 1 & -\sqrt{2}i \\ -\sqrt{2}i & -1 \end{pmatrix}.$$
$$R_{13}(g_5)=\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\begin{pmatrix} 1 & -\sqrt{2}i \\ 0 & -1 \end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix} \sqrt{2}i & 1 \\ 1 & -\sqrt{2}i \end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix} 1 & -\sqrt{2}i \\ -\sqrt{2}i & -1 \end{pmatrix}.$$
$$R_{14}(g_5)=\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(11)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i\lambda.\quad R_9(g_3)=-i\kappa.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=-\lambda.\quad R_{10}(g_3)=\phi.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} -e_8^3 & 0 \\ 0 & e_8^3 \end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} -1/\sqrt{2} & (1+i)/2 \\ (1-i)/2 & 1/\sqrt{2} \end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix} 0 & e_8 \\ e_8^3 & 0 \end{pmatrix}.$$
$$R_{11}(g_5)=-i\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=\begin{pmatrix} e_8 & 0\\ -1+i & -e_8\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix} -\sqrt{2}i & -i\\ -i & \sqrt{2}\end{pmatrix}.\quad R_{12}(g_4)=\begin{pmatrix} -1 & -\sqrt{2}i\\ -\sqrt{2}i & 1\end{pmatrix}.$$
$$R_{12}(g_5)=i\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix} e_8^3 & -\sqrt{2}i\\ 0 & -e_8^3\end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix} -\sqrt{2}i & -e_8^3\\ -e_8 & \sqrt{2}\end{pmatrix}.\quad R_{13}(g_4)=\begin{pmatrix} 1 & -1+i\\ 1+i & -1\end{pmatrix}.$$
$$R_{13}(g_5)=-i\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\begin{pmatrix} e_8 & 0\\ 0 & -e_8\end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix} 1/\sqrt{2} & (1-i)/2\\ (1+i)/2 & -1/\sqrt{2}\end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix} 0 & e_8^3\\ e_8 & 0\end{pmatrix}.$$
$$R_{14}(g_5)=i\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(12)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-e_8.\quad R_9(g_3)=-1.\quad R_9(g_4)=1.\quad R_9(g_5)=i.\quad R_9(g_6)=-1.$$
$$R_{10}(g_2)=-e_8^3.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=1.\quad R_{10}(g_5)=-i.\quad R_{10}(g_6)=-1.$$
$$R_{11}(g_2)=e_8^3.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=-i.\quad R_{11}(g_6)=-1.$$
$$R_{12}(g_2)=e_8.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=i.\quad R_{12}(g_6)=-1.$$
$$R_{13}(g_2)=-e_8.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=i.\quad R_{13}(g_6)=-1.$$
$$R_{14}(g_2)=-e_8^3.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=1.\quad R_{14}(g_5)=-i.\quad R_{14}(g_6)=-1.$$
$$R_{15}(g_2)=e_8^3.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-i.\quad R_{15}(g_6)=-1.$$
$$R_{16}(g_2)=e_8.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=i.\quad R_{16}(g_6)=-1.$$
$$R_{17}(g_2)=-i\lambda.\quad R_{17}(g_3)=-\kappa.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=\epsilon.$$
$$R_{18}(g_2)=-\lambda.\quad R_{18}(g_3)=\kappa.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=\epsilon.\quad R_{18}(g_6)=\epsilon.$$
$$R_{19}(g_2)=\begin{pmatrix} e_8^3 & 0\\ 0 & -e_8^3\end{pmatrix}.\quad R_{19}(g_3)=\begin{pmatrix} 0 & e_8^3\\ e_8 & 0\end{pmatrix}.\quad R_{19}(g_4)=-\epsilon.\quad R_{19}(g_5)=-i\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=\begin{pmatrix} -e_8 & 0\\ 0 & e_8\end{pmatrix}.\quad R_{20}(g_3)=\begin{pmatrix} 0 & -e_8\\ -e_8^3 & 0\end{pmatrix}.\quad R_{20}(g_4)=-\epsilon.\quad R_{20}(g_5)=i\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(13)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=i\lambda.\quad R_9(g_3)=-i\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=\lambda.\quad R_{10}(g_3)=\kappa.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} i & \sqrt{2} \\ 0 & -i \end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} 0 & 1 \\ 1 & -\sqrt{2}i \end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix} 1 & -\sqrt{2}i \\ -\sqrt{2}i & -1 \end{pmatrix}.$$
$$R_{11}(g_5)=-\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=i\lambda.\quad R_{12}(g_3)=\begin{pmatrix} i/\sqrt{2} & i/\sqrt{2} \\ -1/\sqrt{2} & i/\sqrt{2} \end{pmatrix}.\quad R_{12}(g_4)=-\kappa.\quad R_{12}(g_5)=-\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=-\phi.\quad R_{13}(g_3)=\begin{pmatrix} -1/\sqrt{2} & i/\sqrt{2} \\ -1/\sqrt{2} & -1/\sqrt{2} \end{pmatrix}.\quad R_{13}(g_4)=\kappa.\quad R_{13}(g_5)=\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\begin{pmatrix} 1 & \sqrt{2}i \\ 0 & -1 \end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix} 0 & 1 \\ 1 & \sqrt{2}i \end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix} 1 & \sqrt{2}i \\ \sqrt{2}i & -1 \end{pmatrix}.$$
$$R_{14}(g_5)=\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(14)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i\lambda.\quad R_9(g_3)=\kappa.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=-\lambda.\quad R_{10}(g_3)=-\kappa.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} -i & -\sqrt{2}i \\ 0 & i \end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} 0 & 1 \\ -1 & -\sqrt{2}i \end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}.$$
$$R_{11}(g_5)=-\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=-i\phi.\quad R_{12}(g_3)=\begin{pmatrix} 1/\sqrt{2} & 1/\sqrt{2} \\ -1/\sqrt{2} & 1/\sqrt{2} \end{pmatrix}.\quad R_{12}(g_4)=-\kappa.\quad R_{12}(g_5)=-\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix}1&0\\ \sqrt{2}&-1\end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix}-\sqrt{2}i&1\\ -1&0\end{pmatrix}.\quad R_{13}(g_4)=\begin{pmatrix}-1&\sqrt{2}\\ -\sqrt{2}i&1\end{pmatrix}.$$
$$R_{13}(g_5)=\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\lambda.\quad R_{14}(g_3)=\begin{pmatrix}1/\sqrt{2}&-1/\sqrt{2}\\ 1/\sqrt{2}&1/\sqrt{2}\end{pmatrix}.\quad R_{14}(g_4)=\kappa.\quad R_{14}(g_5)=\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(15)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=-1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=i\lambda.\quad R_9(g_3)=i\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=\lambda.\quad R_{10}(g_3)=\kappa.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix}0&-1\\ i&0\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix}-1/\sqrt{2}&(1-i)/2\\ (1+i)/2&-1/\sqrt{2}\end{pmatrix}.\quad R_{11}(g_4)=\begin{pmatrix}0&-e_8\\ -e_8^3&0\end{pmatrix}.$$
$$R_{11}(g_5)=-i\epsilon.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=\begin{pmatrix}e_8&-1-i\\ 0&-e_8\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix}0&-i\\ i&-\sqrt{2}i\end{pmatrix}.\quad R_{12}(g_4)=\begin{pmatrix}1&-\sqrt{2}i\\ \sqrt{2}&-1\end{pmatrix}.$$
$$R_{12}(g_5)=i\epsilon.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix}-e_8^3&\sqrt{2}i\\ 0&e_8^3\end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix}0&e_8\\ -e_8^3&\sqrt{2}i\end{pmatrix}.\quad R_{13}(g_4)=\begin{pmatrix}1&-1+i\\ 1+i&-1\end{pmatrix}.$$
$$R_{13}(g_5)=-i\epsilon.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\begin{pmatrix}e_8&0\\ 0&-e_8\end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix}i/\sqrt{2}&(1+i)/2\\ (1-i)/2&i/\sqrt{2}\end{pmatrix}.\quad R_{14}(g_4)=\begin{pmatrix}0&e_8^3\\ e_8&0\end{pmatrix}.$$
$$R_{14}(g_5)=i\epsilon.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(16)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-e_8.\quad R_9(g_3)=-1.\quad R_9(g_4)=i.\quad R_9(g_5)=-1.\quad R_9(g_6)=1.$$

$R_{10}(g_2) = -e_8^3$. $R_{10}(g_3) = -1$. $R_{10}(g_4) = -i$. $R_{10}(g_5) = -1$. $R_{10}(g_6) = 1$.
$R_{11}(g_2) = e_8^3$. $R_{11}(g_3) = -1$. $R_{11}(g_4) = -i$. $R_{11}(g_5) = -1$. $R_{11}(g_6) = 1$.
$R_{12}(g_2) = e_8$. $R_{12}(g_3) = -1$. $R_{12}(g_4) = i$. $R_{12}(g_5) = -1$. $R_{12}(g_6) = 1$.
$R_{13}(g_2) = -e_8$. $R_{13}(g_3) = 1$. $R_{13}(g_4) = i$. $R_{13}(g_5) = -1$. $R_{13}(g_6) = 1$.
$R_{14}(g_2) = -e_8^3$. $R_{14}(g_3) = 1$. $R_{14}(g_4) = -i$. $R_{14}(g_5) = -1$. $R_{14}(g_6) = 1$.
$R_{15}(g_2) = e_8^3$. $R_{15}(g_3) = 1$. $R_{15}(g_4) = -i$. $R_{15}(g_5) = -1$. $R_{15}(g_6) = 1$.
$R_{16}(g_2) = e_8$. $R_{16}(g_3) = 1$. $R_{16}(g_4) = i$. $R_{16}(g_5) = -1$. $R_{16}(g_6) = 1$.
$R_{17}(g_2) = -e_{16}$. $R_{17}(g_3) = -1$. $R_{17}(g_4) = e_8$. $R_{17}(g_5) = i$. $R_{17}(g_6) = -1$.
$R_{18}(g_2) = -e_{16}^3$. $R_{18}(g_3) = -1$. $R_{18}(g_4) = e_8^3$. $R_{18}(g_5) = -i$. $R_{18}(g_6) = -1$.
$R_{19}(g_2) = -e_{16}^5$. $R_{19}(g_3) = -1$. $R_{19}(g_4) = -e_8$. $R_{19}(g_5) = i$. $R_{19}(g_6) = -1$.
$R_{20}(g_2) = -e_{16}^7$. $R_{20}(g_3) = -1$. $R_{20}(g_4) = -e_8^3$. $R_{20}(g_5) = -i$. $R_{20}(g_6) = -1$.
$R_{21}(g_2) = e_{16}^7$. $R_{21}(g_3) = -1$. $R_{21}(g_4) = -e_8^3$. $R_{21}(g_5) = -i$. $R_{21}(g_6) = -1$.
$R_{22}(g_2) = e_{16}^5$. $R_{22}(g_3) = -1$. $R_{22}(g_4) = -e_8$. $R_{22}(g_5) = i$. $R_{22}(g_6) = -1$.
$R_{23}(g_2) = e_{16}^3$. $R_{23}(g_3) = -1$. $R_{23}(g_4) = e_8^3$. $R_{23}(g_5) = -i$. $R_{23}(g_6) = -1$.
$R_{24}(g_2) = e_{16}$. $R_{24}(g_3) = -1$. $R_{24}(g_4) = e_8$. $R_{24}(g_5) = i$. $R_{24}(g_6) = -1$.
$R_{25}(g_2) = -e_{16}$. $R_{25}(g_3) = 1$. $R_{25}(g_4) = e_8$. $R_{25}(g_5) = i$. $R_{25}(g_6) = -1$.
$R_{26}(g_2) = -e_{16}^3$. $R_{26}(g_3) = 1$. $R_{26}(g_4) = e_8^3$. $R_{26}(g_5) = -i$. $R_{26}(g_6) = -1$.
$R_{27}(g_2) = -e_{16}^5$. $R_{27}(g_3) = 1$. $R_{27}(g_4) = -e_8$. $R_{27}(g_5) = i$. $R_{27}(g_6) = -1$.
$R_{28}(g_2) = -e_{16}^7$. $R_{28}(g_3) = 1$. $R_{28}(g_4) = -e_8^3$. $R_{28}(g_5) = -i$. $R_{28}(g_6) = -1$.
$R_{29}(g_2) = e_{16}^7$. $R_{29}(g_3) = 1$. $R_{29}(g_4) = -e_8^3$. $R_{29}(g_5) = -i$. $R_{29}(g_6) = -1$.
$R_{30}(g_2) = e_{16}^5$. $R_{30}(g_3) = 1$. $R_{30}(g_4) = -e_8$. $R_{30}(g_5) = i$. $R_{30}(g_6) = -1$.
$R_{31}(g_2) = e_{16}^3$. $R_{31}(g_3) = 1$. $R_{31}(g_4) = e_8^3$. $R_{31}(g_5) = -i$. $R_{31}(g_6) = -1$.
$R_{32}(g_2) = e_{16}$. $R_{32}(g_3) = 1$. $R_{32}(g_4) = e_8$. $R_{32}(g_5) = i$. $R_{32}(g_6) = -1$.

$G_{32}^{(17)}$

$R_2(g_2) = -1$. $R_2(g_3) = -1$. $R_2(g_4) = 1$. $R_2(g_5) = 1$. $R_2(g_6) = 1$.
$R_3(g_2) = -1$. $R_3(g_3) = 1$. $R_3(g_4) = 1$. $R_3(g_5) = 1$. $R_3(g_6) = 1$.
$R_4(g_2) = 1$. $R_4(g_3) = -1$. $R_4(g_4) = 1$. $R_4(g_5) = 1$. $R_4(g_6) = 1$.
$R_5(g_2) = -i$. $R_5(g_3) = -1$. $R_5(g_4) = -1$. $R_5(g_5) = 1$. $R_5(g_6) = 1$.
$R_6(g_2) = i$. $R_6(g_3) = -1$. $R_6(g_4) = -1$. $R_6(g_5) = 1$. $R_6(g_6) = 1$.
$R_7(g_2) = -i$. $R_7(g_3) = 1$. $R_7(g_4) = -1$. $R_7(g_5) = 1$. $R_7(g_6) = 1$.
$R_8(g_2) = i$. $R_8(g_3) = 1$. $R_8(g_4) = -1$. $R_8(g_5) = 1$. $R_8(g_6) = 1$.
$R_9(g_2) = -e_8$. $R_9(g_3) = -1$. $R_9(g_4) = i$. $R_9(g_5) = -1$. $R_9(g_6) = 1$.
$R_{10}(g_2) = -e_8^3$. $R_{10}(g_3) = -1$. $R_{10}(g_4) = -i$. $R_{10}(g_5) = -1$. $R_{10}(g_6) = 1$.
$R_{11}(g_2) = e_8^3$. $R_{11}(g_3) = -1$. $R_{11}(g_4) = -i$. $R_{11}(g_5) = -1$. $R_{11}(g_6) = 1$.
$R_{12}(g_2) = e_8$. $R_{12}(g_3) = -1$. $R_{12}(g_4) = i$. $R_{12}(g_5) = -1$. $R_{12}(g_6) = 1$.
$R_{13}(g_2) = -e_8$. $R_{13}(g_3) = 1$. $R_{13}(g_4) = i$. $R_{13}(g_5) = -1$. $R_{13}(g_6) = 1$.
$R_{14}(g_2) = -e_8^3$. $R_{14}(g_3) = 1$. $R_{14}(g_4) = -i$. $R_{14}(g_5) = -1$. $R_{14}(g_6) = 1$.
$R_{15}(g_2) = e_8^3$. $R_{15}(g_3) = 1$. $R_{15}(g_4) = -i$. $R_{15}(g_5) = -1$. $R_{15}(g_6) = 1$.
$R_{16}(g_2) = e_8$. $R_{16}(g_3) = 1$. $R_{16}(g_4) = i$. $R_{16}(g_5) = -1$. $R_{16}(g_6) = 1$.

$$R_{17}(g_2)=\begin{pmatrix} e_{16}^5 & 0\\ 0 & -e_{16}^5\end{pmatrix}.\quad R_{17}(g_3)=\begin{pmatrix} 0 & -e_8^3\\ e_8 & 0\end{pmatrix}.\quad R_{17}(g_4)=\begin{pmatrix} -e_8 & 0\\ 0 & -e_8\end{pmatrix}.$$
$$R_{17}(g_5)=i\epsilon.\quad R_{17}(g_6)=-\epsilon.$$

$$R_{18}(g_2)=\begin{pmatrix} e_{16}^7 & 0\\ 0 & -e_{16}^7\end{pmatrix}.\quad R_{18}(g_3)=\begin{pmatrix} 0 & e_{16}^3\\ -e_{16}^5 & 0\end{pmatrix}.\quad R_{18}(g_4)=\begin{pmatrix} -e_8^3 & 0\\ 0 & -e_8^3\end{pmatrix}.$$
$$R_{18}(g_5)=-i\epsilon.\quad R_{18}(g_6)=-\epsilon.$$

$$R_{19}(g_2)=\begin{pmatrix} -e_{16}^3 & 0\\ 0 & e_{16}^3\end{pmatrix}.\quad R_{19}(g_3)=\begin{pmatrix} 0 & -e_8^3\\ e_8 & 0\end{pmatrix}.\quad R_{19}(g_4)=\begin{pmatrix} e_8^3 & 0\\ 0 & e_8^3\end{pmatrix}.$$
$$R_{19}(g_5)=-i\epsilon.\quad R_{19}(g_6)=-\epsilon.$$

$$R_{20}(g_2)=\begin{pmatrix} e_{16} & 0\\ 0 & -e_{16}\end{pmatrix}.\quad R_{20}(g_3)=\begin{pmatrix} 0 & -e_{16}^7\\ e_{16} & 0\end{pmatrix}.\quad R_{20}(g_4)=\begin{pmatrix} e_8 & 0\\ 0 & e_8\end{pmatrix}.$$
$$R_{20}(g_5)=i\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(18)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-\lambda.\quad R_5(g_3)=-\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.\quad R_5(g_6)=\epsilon.$$
$$R_6(g_2)=-\phi.\quad R_6(g_3)=\begin{pmatrix} -1/\sqrt{2} & 1/\sqrt{2}\\ 1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_6(g_4)=-\kappa.\quad R_6(g_5)=-\epsilon.\quad R_6(g_6)=\epsilon.$$
$$R_7(g_2)=\phi.\quad R_7(g_3)=\begin{pmatrix} -1/\sqrt{2} & 1/\sqrt{2}\\ 1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_7(g_4)=-\kappa.\quad R_7(g_5)=-\epsilon.\quad R_7(g_6)=\epsilon.$$

$$R_8(g_2)=\begin{pmatrix} 1 & -\sqrt{2}i\\ 0 & -1\end{pmatrix}.\quad R_8(g_3)=\begin{pmatrix} -(\sqrt{2}+2)c_{3/8} & (e_{16}-e_{16}^3+e_{16}^5-e_{16}^7)/2\\ -(\sqrt{2}+2)c_{3/8} & (e_{16}+e_{16}^3-e_{16}^5-e_{16}^7)/2\end{pmatrix}.$$
$$R_8(g_4)=\begin{pmatrix} 0 & -1\\ 1 & -\sqrt{2}i\end{pmatrix}.\quad R_8(g_5)=\begin{pmatrix} 1 & -\sqrt{2}i\\ \sqrt{2} & -1\end{pmatrix}.\quad R_8(g_6)=-\epsilon.$$

$$R_9(g_2)=-\lambda.\quad R_9(g_3)=\begin{pmatrix} (-e_{16}^3+e_{16}^5)/2 & (e_{16}-e_{16}^7)/2\\ (e_{16}-e_{16}^7)/2 & (e_{16}^3-e_{16}^5)/2\end{pmatrix}.$$
$$R_9(g_4)=\begin{pmatrix} -1/\sqrt{2} & 1/\sqrt{2}\\ -1/\sqrt{2} & -1/\sqrt{2}\end{pmatrix}.\quad R_9(g_5)=\kappa.\quad R_9(g_6)=-\epsilon.$$

$$R_{10}(g_2)=\begin{pmatrix} 1-\sqrt{2}i & -e_{16}^3+e_{16}^5\\ -e_{16}+e_{16}^3-e_{16}^5+e_{16}^7 & -1+\sqrt{2}\end{pmatrix}.\quad R_{10}(g_3)=\phi.$$
$$R_{10}(g_4)=\begin{pmatrix} 1 & -e_{16}^3+e_{16}^5\\ e_{16}^3-e_{16}^5 & -1+\sqrt{2}\end{pmatrix}.\quad R_{10}(g_5)=\begin{pmatrix} 1-\sqrt{2}i & e_{16}-e_{16}^3+e_{16}^5-e_{16}^7\\ -e_{16}+e_{16}^3-e_{16}^5+e_{16}^7 & -1+\sqrt{2}\end{pmatrix}.$$
$$R_{10}(g_6)=-\epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} 1 & -e_{16}^3 + e_{16}^5 \\ 0 & -1 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} e_{16}^3 - e_{16}^5 & -1 \\ 1 - \sqrt{2}i & -e_{16}^3 + e_{16}^5 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} -1 + \sqrt{2} & e_{16}^3 - e_{16}^5 \\ -e_{16}^3 + e_{16}^5 & 1 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -1 + \sqrt{2} & -e_{16} + e_{16}^3 - e_{16}^5 + e_{16}^7 \\ e_{16} - e_{16}^3 + e_{16}^5 - e_{16}^7 & 1 - \sqrt{2}i \end{pmatrix}.$$

$$R_{11}(g_6) = -\epsilon.$$

$G_{32}^{(19)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = \lambda. \quad R_5(g_3) = -\phi. \quad R_5(g_4) = -\epsilon. \quad R_5(g_5) = \epsilon. \quad R_5(g_6) = \epsilon.$$

$$R_6(g_2) = \begin{pmatrix} -1 & 0 \\ \sqrt{2} & 1 \end{pmatrix}. \quad R_6(g_3) = -\phi. \quad R_6(g_4) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}. \quad R_6(g_5) = -\epsilon. \quad R_6(g_6) = \epsilon.$$

$$R_7(g_2) = \begin{pmatrix} -1 & \sqrt{2} \\ 0 & 1 \end{pmatrix}. \quad R_7(g_3) = \begin{pmatrix} -\sqrt{2}i & 1 \\ -1 & \sqrt{2} \end{pmatrix}. \quad R_7(g_4) = \begin{pmatrix} 1 & -\sqrt{2}i \\ \sqrt{2} & -1 \end{pmatrix}.$$

$$R_7(g_5) = -\epsilon. \quad R_7(g_6) = \epsilon.$$

$$R_8(g_2) = \begin{pmatrix} i & 0 \\ e_{16} - e_{16}^7 & -i \end{pmatrix}. \quad R_8(g_3) = \begin{pmatrix} -e_{16} - e_{16}^3 + e_{16}^5 + e_{16}^7 & e_8 + e_8^2 + e_8^3 \\ e_8 + e_8^2 + e_8^3 & e_{16} + e_{16}^3 - e_{16}^5 - e_{16}^7 \end{pmatrix}.$$

$$R_8(g_4) = \begin{pmatrix} -1 - \sqrt{2}i & e_{16}^3 + e_{16}^5 \\ e_{16}^3 + e_{16}^5 & 1 \end{pmatrix}. \quad R_8(g_5) = \begin{pmatrix} -1 - \sqrt{2}i & e_{16} + e_{16}^3 + e_{16}^5 + e_{16}^7 \\ e_{16} + e_{16}^3 + e_{16}^5 + e_{16}^7 & 1 + \sqrt{2} \end{pmatrix}.$$

$$R_8(g_6) = -\epsilon.$$

$$R_9(g_2) = -i\phi. \quad R_9(g_3) = \begin{pmatrix} (-e_{16} + e_{16}^7)/2 & (-e_{16}^3 + e_{16}^5)/2 \\ (-e_{16}^3 + e_{16}^5)/2 & (e_{16} - e_{16}^7)/2 \end{pmatrix}.$$

$$R_9(g_4) = \begin{pmatrix} -1/\sqrt{2} & 1/\sqrt{2} \\ -1/\sqrt{2} & -1/\sqrt{2} \end{pmatrix}. \quad R_9(g_5) = \kappa. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = \begin{pmatrix} i & -e_{16}^3 - e_{16}^5 \\ 0 & -i \end{pmatrix}. \quad R_{10}(g_3) = \phi.$$

$$R_{10}(g_4) = \begin{pmatrix} -1 & e_{16} - e_{16}^7 \\ -e_{16} + e_{16}^7 & 1 + \sqrt{2} \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} 1 + \sqrt{2} & -e_{16} - e_{16}^3 + e_{16}^5 + e_{16}^7 \\ e_{16} + e_{16}^3 - e_{16}^5 - e_{16}^7 & -1 - \sqrt{2}i \end{pmatrix}.$$

$$R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} -e_8 - e_8^2 - e_8^3 & e_{16} + e_{16}^3 + e_{16}^5 + e_{16}^7 \\ -e_{16}^3 - e_{16}^5 & e_8 + e_8^2 + e_8^3 \end{pmatrix}.$$

$$R_{11}(g_3) = \begin{pmatrix} -e_{16} - e_{16}^3 + e_{16}^5 + e_{16}^7 & 1+\sqrt{2} \\ -1-\sqrt{2}i & e_{16} + e_{16}^3 - e_{16}^5 - e_{16}^7 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 1+\sqrt{2} & -e_{16} + e_{16}^7 \\ e_{16} - e_{16}^7 & -1 \end{pmatrix}.$$

$$R_{11}(g_5) = \begin{pmatrix} -1-\sqrt{2}i & e_{16} + e_{16}^3 - e_{16}^5 - e_{16}^7 \\ -e_{16} - e_{16}^3 + e_{16}^5 + e_{16}^7 & 1+\sqrt{2} \end{pmatrix}.$$

$$R_{11}(g_6) = -\epsilon.$$

$G_{32}^{(20)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -\lambda. \quad R_5(g_3) = \phi. \quad R_5(g_4) = -\epsilon. \quad R_5(g_5) = \epsilon. \quad R_5(g_6) = \epsilon.$$

$$R_6(g_2) = \begin{pmatrix} -1 & -\sqrt{2}i \\ 0 & 1 \end{pmatrix}. \quad R_6(g_3) = \begin{pmatrix} \sqrt{2} & 1 \\ -1 & -\sqrt{2}i \end{pmatrix}. \quad R_6(g_4) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}.$$

$$R_6(g_5) = -\epsilon. \quad R_6(g_6) = \epsilon.$$

$$R_7(g_2) = \begin{pmatrix} -1 & 0 \\ \sqrt{2} & 1 \end{pmatrix}. \quad R_7(g_3) = \phi. \quad R_7(g_4) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}. \quad R_7(g_5) = -\epsilon. \quad R_7(g_6) = \epsilon.$$

$$R_8(g_2) = \begin{pmatrix} i & 0 \\ -\sqrt{2}i & -i \end{pmatrix}. \quad R_8(g_3) = \begin{pmatrix} (e_{16} - e_{16}^3 - e_{16}^5 + e_{16}^7)/2 & (-e_{16} - e_{16}^3 - e_{16}^5 - e_{16}^7)/2 \\ (e_{16} - e_{16}^3 - e_{16}^5 + e_{16}^7)/2 & (-e_{16} + e_{16}^3 + e_{16}^5 - e_{16}^7)/2 \end{pmatrix}.$$

$$R_8(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -\sqrt{2}i \end{pmatrix}. \quad R_8(g_5) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}. \quad R_8(g_6) = -\epsilon.$$

$$R_9(g_2) = \begin{pmatrix} -i & 0 \\ -\sqrt{2}i & i \end{pmatrix}. \quad R_9(g_3) = \begin{pmatrix} (e_{16} + e_{16}^3 + e_{16}^5 + e_{16}^7)/2 & (-e_{16} - e_{16}^3 - e_{16}^5 - e_{16}^7)/2 \\ (-e_{16} + e_{16}^3 + e_{16}^5 - e_{16}^7)/2 & (-e_{16} - e_{16}^3 - e_{16}^5 - e_{16}^7)/2 \end{pmatrix}.$$

$$R_9(g_4) = \begin{pmatrix} -\sqrt{2}i & 1 \\ -1 & 0 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} -1 & \sqrt{2} \\ -\sqrt{2}i & 1 \end{pmatrix}. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = -i\lambda. \quad R_{10}(g_3) = \begin{pmatrix} (-e_{16}^3 - e_{16}^5)/2 & (-e_{16}^3 + e_{16}^5)/2 \\ (e_{16}^3 - e_{16}^5)/2 & (e_{16}^3 + e_{16}^5)/2 \end{pmatrix}.$$

$$R_{10}(g_4) = \begin{pmatrix} 1/\sqrt{2} & i/\sqrt{2} \\ i/\sqrt{2} & 1/\sqrt{2} \end{pmatrix}. \quad R_{10}(g_5) = -i\phi. \quad R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} -e_8 - e_8^2 - e_8^3 & e_{16} + e_{16}^3 + e_{16}^5 + e_{16}^7 \\ -e_{16}^3 - e_{16}^5 & e_8 + e_8^2 + e_8^3 \end{pmatrix}.$$

$$R_{11}(g_3) = \begin{pmatrix} e_{16}^3 + e_{16}^5 & -e_8 - e_8^2 - e_8^3 \\ i & -e_{16}^3 - e_{16}^5 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} -1 & e_{16} - e_{16}^7 \\ -e_{16} + e_{16}^7 & 1 + \sqrt{2} \end{pmatrix}.$$

$$R_{11}(g_5) = \begin{pmatrix} 1 + \sqrt{2} & -e_{16} - e_{16}^3 + e_{16}^5 + e_{16}^7 \\ e_{16} + e_{16}^3 - e_{16}^5 - e_{16}^7 & -1 - \sqrt{2}i \end{pmatrix}.$$

$$R_{11}(g_6) = -\epsilon.$$

$G_{32}^{(21)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = -i. \quad R_9(g_4) = -1. \quad R_9(g_5) = 1. \quad R_9(g_6) = -1.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = i. \quad R_{10}(g_4) = -1. \quad R_{10}(g_5) = 1. \quad R_{10}(g_6) = -1.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = -i. \quad R_{11}(g_4) = 1. \quad R_{11}(g_5) = 1. \quad R_{11}(g_6) = -1.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = i. \quad R_{12}(g_4) = 1. \quad R_{12}(g_5) = 1. \quad R_{12}(g_6) = -1.$$
$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = -i. \quad R_{13}(g_4) = -1. \quad R_{13}(g_5) = 1. \quad R_{13}(g_6) = -1.$$
$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = i. \quad R_{14}(g_4) = -1. \quad R_{14}(g_5) = 1. \quad R_{14}(g_6) = -1.$$
$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = -i. \quad R_{15}(g_4) = 1. \quad R_{15}(g_5) = 1. \quad R_{15}(g_6) = -1.$$
$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = i. \quad R_{16}(g_4) = 1. \quad R_{16}(g_5) = 1. \quad R_{16}(g_6) = -1.$$
$$R_{17}(g_2) = -i. \quad R_{17}(g_3) = -1. \quad R_{17}(g_4) = -1. \quad R_{17}(g_5) = -1. \quad R_{17}(g_6) = 1.$$
$$R_{18}(g_2) = i. \quad R_{18}(g_3) = -1. \quad R_{18}(g_4) = -1. \quad R_{18}(g_5) = -1. \quad R_{18}(g_6) = 1.$$
$$R_{19}(g_2) = -i. \quad R_{19}(g_3) = -1. \quad R_{19}(g_4) = 1. \quad R_{19}(g_5) = -1. \quad R_{19}(g_6) = 1.$$
$$R_{20}(g_2) = i. \quad R_{20}(g_3) = -1. \quad R_{20}(g_4) = 1. \quad R_{20}(g_5) = -1. \quad R_{20}(g_6) = 1.$$
$$R_{21}(g_2) = -i. \quad R_{21}(g_3) = 1. \quad R_{21}(g_4) = -1. \quad R_{21}(g_5) = -1. \quad R_{21}(g_6) = 1.$$
$$R_{22}(g_2) = i. \quad R_{22}(g_3) = 1. \quad R_{22}(g_4) = -1. \quad R_{22}(g_5) = -1. \quad R_{22}(g_6) = 1.$$
$$R_{23}(g_2) = -i. \quad R_{23}(g_3) = 1. \quad R_{23}(g_4) = 1. \quad R_{23}(g_5) = -1. \quad R_{23}(g_6) = 1.$$
$$R_{24}(g_2) = i. \quad R_{24}(g_3) = 1. \quad R_{24}(g_4) = 1. \quad R_{24}(g_5) = -1. \quad R_{24}(g_6) = 1.$$
$$R_{25}(g_2) = -i. \quad R_{25}(g_3) = -i. \quad R_{25}(g_4) = -1. \quad R_{25}(g_5) = -1. \quad R_{25}(g_6) = -1.$$
$$R_{26}(g_2) = i. \quad R_{26}(g_3) = i. \quad R_{26}(g_4) = -1. \quad R_{26}(g_5) = -1. \quad R_{26}(g_6) = -1.$$
$$R_{27}(g_2) = -i. \quad R_{27}(g_3) = -i. \quad R_{27}(g_4) = 1. \quad R_{27}(g_5) = -1. \quad R_{27}(g_6) = -1.$$
$$R_{28}(g_2) = i. \quad R_{28}(g_3) = i. \quad R_{28}(g_4) = 1. \quad R_{28}(g_5) = -1. \quad R_{28}(g_6) = -1.$$
$$R_{29}(g_2) = -i. \quad R_{29}(g_3) = i. \quad R_{29}(g_4) = -1. \quad R_{29}(g_5) = -1. \quad R_{29}(g_6) = -1.$$
$$R_{30}(g_2) = i. \quad R_{30}(g_3) = -i. \quad R_{30}(g_4) = -1. \quad R_{30}(g_5) = -1. \quad R_{30}(g_6) = -1.$$

$$R_{31}(g_2)=-i.\quad R_{31}(g_3)=i.\quad R_{31}(g_4)=1.\quad R_{31}(g_5)=-1.\quad R_{31}(g_6)=-1.$$
$$R_{32}(g_2)=i.\quad R_{32}(g_3)=-i.\quad R_{32}(g_4)=1.\quad R_{32}(g_5)=-1.\quad R_{32}(g_6)=-1.$$

$G_{32}^{(22)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=1.\quad R_9(g_6)=-1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=1.\quad R_{10}(g_6)=-1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=-1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=1.\quad R_{12}(g_6)=-1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=-1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=1.\quad R_{14}(g_6)=-1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=-1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=1.\quad R_{16}(g_6)=-1.$$
$$R_{17}(g_2)=i\lambda.\quad R_{17}(g_3)=-\phi.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=\lambda.\quad R_{18}(g_3)=\phi.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=-\epsilon.\quad R_{18}(g_6)=\epsilon.$$
$$R_{19}(g_2)=i\lambda.\quad R_{19}(g_3)=-\phi.\quad R_{19}(g_4)=\epsilon.\quad R_{19}(g_5)=-\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=\lambda.\quad R_{20}(g_3)=-\phi.\quad R_{20}(g_4)=\epsilon.\quad R_{20}(g_5)=-\epsilon.\quad R_{20}(g_6)=\epsilon.$$

$G_{32}^{(23)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=1.\quad R_9(g_6)=-1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=1.\quad R_{10}(g_6)=-1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=-1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=1.\quad R_{12}(g_6)=-1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=-1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=1.\quad R_{14}(g_6)=-1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=-1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=1.\quad R_{16}(g_6)=-1.$$
$$R_{17}(g_2)=-i\lambda.\quad R_{17}(g_3)=i\phi.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$

$R_{18}(g_2) = \lambda.\quad R_{18}(g_3) = -\kappa.\quad R_{18}(g_4) = -\epsilon.\quad R_{18}(g_5) = -\epsilon.\quad R_{18}(g_6) = \epsilon.$
$R_{19}(g_2) = i\lambda.\quad R_{19}(g_3) = i\phi.\quad R_{19}(g_4) = \epsilon.\quad R_{19}(g_5) = -\epsilon.\quad R_{19}(g_6) = -\epsilon.$
$R_{20}(g_2) = -\lambda.\quad R_{20}(g_3) = \kappa.\quad R_{20}(g_4) = \epsilon.\quad R_{20}(g_5) = -\epsilon.\quad R_{20}(g_6) = \epsilon.$

$G_{32}^{(24)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = -1.\quad R_2(g_5) = 1.\quad R_2(g_6) = 1.$
$R_3(g_2) = -1.\quad R_3(g_3) = -1.\quad R_3(g_4) = 1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$
$R_4(g_2) = -1.\quad R_4(g_3) = 1.\quad R_4(g_4) = -1.\quad R_4(g_5) = 1.\quad R_4(g_6) = 1.$
$R_5(g_2) = -1.\quad R_5(g_3) = 1.\quad R_5(g_4) = 1.\quad R_5(g_5) = 1.\quad R_5(g_6) = 1.$
$R_6(g_2) = 1.\quad R_6(g_3) = -1.\quad R_6(g_4) = -1.\quad R_6(g_5) = 1.\quad R_6(g_6) = 1.$
$R_7(g_2) = 1.\quad R_7(g_3) = -1.\quad R_7(g_4) = 1.\quad R_7(g_5) = 1.\quad R_7(g_6) = 1.$
$R_8(g_2) = 1.\quad R_8(g_3) = 1.\quad R_8(g_4) = -1.\quad R_8(g_5) = 1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -i.\quad R_9(g_3) = -1.\quad R_9(g_4) = -1.\quad R_9(g_5) = 1.\quad R_9(g_6) = -1.$
$R_{10}(g_2) = i.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = -1.\quad R_{10}(g_5) = 1.\quad R_{10}(g_6) = -1.$
$R_{11}(g_2) = -i.\quad R_{11}(g_3) = -1.\quad R_{11}(g_4) = 1.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = -1.$
$R_{12}(g_2) = i.\quad R_{12}(g_3) = -1.\quad R_{12}(g_4) = 1.\quad R_{12}(g_5) = 1.\quad R_{12}(g_6) = -1.$
$R_{13}(g_2) = -i.\quad R_{13}(g_3) = 1.\quad R_{13}(g_4) = -1.\quad R_{13}(g_5) = 1.\quad R_{13}(g_6) = -1.$
$R_{14}(g_2) = i.\quad R_{14}(g_3) = 1.\quad R_{14}(g_4) = -1.\quad R_{14}(g_5) = 1.\quad R_{14}(g_6) = -1.$
$R_{15}(g_2) = -i.\quad R_{15}(g_3) = 1.\quad R_{15}(g_4) = 1.\quad R_{15}(g_5) = 1.\quad R_{15}(g_6) = -1.$
$R_{16}(g_2) = i.\quad R_{16}(g_3) = 1.\quad R_{16}(g_4) = 1.\quad R_{16}(g_5) = 1.\quad R_{16}(g_6) = -1.$
$R_{17}(g_2) = i\lambda.\quad R_{17}(g_3) = -i\kappa.\quad R_{17}(g_4) = -i\epsilon.\quad R_{17}(g_5) = -\epsilon.\quad R_{17}(g_6) = -\epsilon.$
$R_{18}(g_2) = -i\lambda.\quad R_{18}(g_3) = \phi.\quad R_{18}(g_4) = i\epsilon.\quad R_{18}(g_5) = -\epsilon.\quad R_{18}(g_6) = -\epsilon.$
$R_{19}(g_2) = -\lambda.\quad R_{19}(g_3) = -\phi.\quad R_{19}(g_4) = -i\epsilon.\quad R_{19}(g_5) = -\epsilon.\quad R_{19}(g_6) = \epsilon.$
$R_{20}(g_2) = \lambda.\quad R_{20}(g_3) = i\kappa.\quad R_{20}(g_4) = i\epsilon.\quad R_{20}(g_5) = -\epsilon.\quad R_{20}(g_6) = \epsilon.$

$G_{32}^{(25)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = -1.\quad R_2(g_5) = 1.\quad R_2(g_6) = 1.$
$R_3(g_2) = -1.\quad R_3(g_3) = -1.\quad R_3(g_4) = 1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$
$R_4(g_2) = -1.\quad R_4(g_3) = 1.\quad R_4(g_4) = -1.\quad R_4(g_5) = 1.\quad R_4(g_6) = 1.$
$R_5(g_2) = -1.\quad R_5(g_3) = 1.\quad R_5(g_4) = 1.\quad R_5(g_5) = 1.\quad R_5(g_6) = 1.$
$R_6(g_2) = 1.\quad R_6(g_3) = -1.\quad R_6(g_4) = -1.\quad R_6(g_5) = 1.\quad R_6(g_6) = 1.$
$R_7(g_2) = 1.\quad R_7(g_3) = -1.\quad R_7(g_4) = 1.\quad R_7(g_5) = 1.\quad R_7(g_6) = 1.$
$R_8(g_2) = 1.\quad R_8(g_3) = 1.\quad R_8(g_4) = -1.\quad R_8(g_5) = 1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -i.\quad R_9(g_3) = -1.\quad R_9(g_4) = -i.\quad R_9(g_5) = 1.\quad R_9(g_6) = -1.$
$R_{10}(g_2) = i.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = i.\quad R_{10}(g_5) = 1.\quad R_{10}(g_6) = -1.$
$R_{11}(g_2) = -i.\quad R_{11}(g_3) = -1.\quad R_{11}(g_4) = i.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = -1.$
$R_{12}(g_2) = i.\quad R_{12}(g_3) = -1.\quad R_{12}(g_4) = -i.\quad R_{12}(g_5) = 1.\quad R_{12}(g_6) = -1.$
$R_{13}(g_2) = -i.\quad R_{13}(g_3) = 1.\quad R_{13}(g_4) = -i.\quad R_{13}(g_5) = 1.\quad R_{13}(g_6) = -1.$
$R_{14}(g_2) = i.\quad R_{14}(g_3) = 1.\quad R_{14}(g_4) = i.\quad R_{14}(g_5) = 1.\quad R_{14}(g_6) = -1.$
$R_{15}(g_2) = -i.\quad R_{15}(g_3) = 1.\quad R_{15}(g_4) = i.\quad R_{15}(g_5) = 1.\quad R_{15}(g_6) = -1.$
$R_{16}(g_2) = i.\quad R_{16}(g_3) = 1.\quad R_{16}(g_4) = -i.\quad R_{16}(g_5) = 1.\quad R_{16}(g_6) = -1.$

$R_{17}(g_2) = -\lambda.\quad R_{17}(g_3) = -\phi.\quad R_{17}(g_4) = -\epsilon.\quad R_{17}(g_5) = -\epsilon.\quad R_{17}(g_6) = \epsilon.$
$R_{18}(g_2) = -\lambda.\quad R_{18}(g_3) = -\phi.\quad R_{18}(g_4) = \epsilon.\quad R_{18}(g_5) = -\epsilon.\quad R_{18}(g_6) = \epsilon.$
$R_{19}(g_2) = -i\lambda.\quad R_{19}(g_3) = \phi.\quad R_{19}(g_4) = -i\epsilon.\quad R_{19}(g_5) = -\epsilon.\quad R_{19}(g_6) = -\epsilon.$
$R_{20}(g_2) = -i\lambda.\quad R_{20}(g_3) = \phi.\quad R_{20}(g_4) = i\epsilon.\quad R_{20}(g_5) = -\epsilon.\quad R_{20}(g_6) = -\epsilon.$

$G_{32}^{(26)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = -1.\quad R_2(g_5) = 1.\quad R_2(g_6) = 1.$
$R_3(g_2) = -1.\quad R_3(g_3) = -1.\quad R_3(g_4) = 1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$
$R_4(g_2) = -1.\quad R_4(g_3) = 1.\quad R_4(g_4) = -1.\quad R_4(g_5) = 1.\quad R_4(g_6) = 1.$
$R_5(g_2) = -1.\quad R_5(g_3) = 1.\quad R_5(g_4) = 1.\quad R_5(g_5) = 1.\quad R_5(g_6) = 1.$
$R_6(g_2) = 1.\quad R_6(g_3) = -1.\quad R_6(g_4) = -1.\quad R_6(g_5) = 1.\quad R_6(g_6) = 1.$
$R_7(g_2) = 1.\quad R_7(g_3) = -1.\quad R_7(g_4) = 1.\quad R_7(g_5) = 1.\quad R_7(g_6) = 1.$
$R_8(g_2) = 1.\quad R_8(g_3) = 1.\quad R_8(g_4) = -1.\quad R_8(g_5) = 1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -i.\quad R_9(g_3) = -1.\quad R_9(g_4) = -i.\quad R_9(g_5) = 1.\quad R_9(g_6) = -1.$
$R_{10}(g_2) = i.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = i.\quad R_{10}(g_5) = 1.\quad R_{10}(g_6) = -1.$
$R_{11}(g_2) = -i.\quad R_{11}(g_3) = -1.\quad R_{11}(g_4) = i.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = -1.$
$R_{12}(g_2) = i.\quad R_{12}(g_3) = -1.\quad R_{12}(g_4) = -i.\quad R_{12}(g_5) = 1.\quad R_{12}(g_6) = -1.$
$R_{13}(g_2) = -i.\quad R_{13}(g_3) = 1.\quad R_{13}(g_4) = -i.\quad R_{13}(g_5) = 1.\quad R_{13}(g_6) = -1.$
$R_{14}(g_2) = i.\quad R_{14}(g_3) = 1.\quad R_{14}(g_4) = i.\quad R_{14}(g_5) = 1.\quad R_{14}(g_6) = -1.$
$R_{15}(g_2) = -i.\quad R_{15}(g_3) = 1.\quad R_{15}(g_4) = i.\quad R_{15}(g_5) = 1.\quad R_{15}(g_6) = -1.$
$R_{16}(g_2) = i.\quad R_{16}(g_3) = 1.\quad R_{16}(g_4) = -i.\quad R_{16}(g_5) = 1.\quad R_{16}(g_6) = -1.$
$R_{17}(g_2) = -i\lambda.\quad R_{17}(g_3) = -i\phi.\quad R_{17}(g_4) = -\epsilon.\quad R_{17}(g_5) = -\epsilon.\quad R_{17}(g_6) = -\epsilon.$
$R_{18}(g_2) = i\lambda.\quad R_{18}(g_3) = i\phi.\quad R_{18}(g_4) = \epsilon.\quad R_{18}(g_5) = -\epsilon.\quad R_{18}(g_6) = -\epsilon.$
$R_{19}(g_2) = -\lambda.\quad R_{19}(g_3) = -i\phi.\quad R_{19}(g_4) = -i\epsilon.\quad R_{19}(g_5) = -\epsilon.\quad R_{19}(g_6) = \epsilon.$
$R_{20}(g_2) = -\lambda.\quad R_{20}(g_3) = -\kappa.\quad R_{20}(g_4) = i\epsilon.\quad R_{20}(g_5) = -\epsilon.\quad R_{20}(g_6) = \epsilon.$

$G_{32}^{(27)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = -1.\quad R_2(g_5) = 1.\quad R_2(g_6) = 1.$
$R_3(g_2) = -1.\quad R_3(g_3) = -1.\quad R_3(g_4) = 1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$
$R_4(g_2) = -1.\quad R_4(g_3) = 1.\quad R_4(g_4) = -1.\quad R_4(g_5) = 1.\quad R_4(g_6) = 1.$
$R_5(g_2) = -1.\quad R_5(g_3) = 1.\quad R_5(g_4) = 1.\quad R_5(g_5) = 1.\quad R_5(g_6) = 1.$
$R_6(g_2) = 1.\quad R_6(g_3) = -1.\quad R_6(g_4) = -1.\quad R_6(g_5) = 1.\quad R_6(g_6) = 1.$
$R_7(g_2) = 1.\quad R_7(g_3) = -1.\quad R_7(g_4) = 1.\quad R_7(g_5) = 1.\quad R_7(g_6) = 1.$
$R_8(g_2) = 1.\quad R_8(g_3) = 1.\quad R_8(g_4) = -1.\quad R_8(g_5) = 1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -\lambda.\quad R_9(g_3) = \epsilon.\quad R_9(g_4) = -\phi.\quad R_9(g_5) = \epsilon.\quad R_9(g_6) = -\epsilon.$
$R_{10}(g_2) = -\lambda.\quad R_{10}(g_3) = -\epsilon.\quad R_{10}(g_4) = -\phi.\quad R_{10}(g_5) = \epsilon.\quad R_{10}(g_6) = -\epsilon.$
$R_{11}(g_2) = -\lambda.\quad R_{11}(g_3) = -\phi.\quad R_{11}(g_4) = -\epsilon.\quad R_{11}(g_5) = -\epsilon.\quad R_{11}(g_6) = \epsilon.$
$R_{12}(g_2) = \lambda.\quad R_{12}(g_3) = \phi.\quad R_{12}(g_4) = -\phi.\quad R_{12}(g_5) = -\epsilon.\quad R_{12}(g_6) = -\epsilon.$
$R_{13}(g_2) = \lambda.\quad R_{13}(g_3) = \phi.\quad R_{13}(g_4) = \phi.\quad R_{13}(g_5) = -\epsilon.\quad R_{13}(g_6) = -\epsilon.$
$R_{14}(g_2) = -\lambda.\quad R_{14}(g_3) = \phi.\quad R_{14}(g_4) = \epsilon.\quad R_{14}(g_5) = -\epsilon.\quad R_{14}(g_6) = \epsilon.$

$G_{32}^{(28)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = \lambda. \quad R_9(g_3) = \kappa. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$

$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = -\kappa. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = -\lambda. \quad R_{11}(g_3) = -\epsilon. \quad R_{11}(g_4) = \phi. \quad R_{11}(g_5) = \epsilon. \quad R_{11}(g_6) = -\epsilon.$$

$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = -\phi. \quad R_{12}(g_5) = \epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = \lambda. \quad R_{13}(g_3) = -\kappa. \quad R_{13}(g_4) = -i\kappa. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = -\epsilon.$$

$$R_{14}(g_2) = -\lambda. \quad R_{14}(g_3) = -i\phi. \quad R_{14}(g_4) = -\phi. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = -\epsilon.$$

$G_{32}^{(29)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = i\lambda. \quad R_9(g_3) = \kappa. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$

$$R_{10}(g_2) = i\lambda. \quad R_{10}(g_3) = \kappa. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = -\lambda. \quad R_{11}(g_3) = -\epsilon. \quad R_{11}(g_4) = \phi. \quad R_{11}(g_5) = \epsilon. \quad R_{11}(g_6) = -\epsilon.$$

$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = -\phi. \quad R_{12}(g_5) = \epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = i\lambda. \quad R_{13}(g_3) = \kappa. \quad R_{13}(g_4) = i\kappa. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = -\epsilon.$$

$$R_{14}(g_2) = i\lambda. \quad R_{14}(g_3) = -i\phi. \quad R_{14}(g_4) = -\phi. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = -\epsilon.$$

$G_{32}^{(30)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = \lambda. \quad R_9(g_3) = \epsilon. \quad R_9(g_4) = \phi. \quad R_9(g_5) = \epsilon. \quad R_9(g_6) = -\epsilon.$$
$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = -\phi. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = -\epsilon.$$
$$R_{11}(g_2) = \lambda. \quad R_{11}(g_3) = i\kappa. \quad R_{11}(g_4) = \kappa. \quad R_{11}(g_5) = -\epsilon. \quad R_{11}(g_6) = -\epsilon.$$
$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = \phi. \quad R_{12}(g_4) = i\phi. \quad R_{12}(g_5) = -\epsilon. \quad R_{12}(g_6) = -\epsilon.$$
$$R_{13}(g_2) = -\lambda. \quad R_{13}(g_3) = i\kappa. \quad R_{13}(g_4) = -i\epsilon. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = \epsilon.$$
$$R_{14}(g_2) = \lambda. \quad R_{14}(g_3) = i\kappa. \quad R_{14}(g_4) = i\epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(31)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = \lambda. \quad R_9(g_3) = \kappa. \quad R_9(g_4) = \kappa. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = -\epsilon.$$
$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = \kappa. \quad R_{10}(g_4) = -\kappa. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = -\epsilon.$$
$$R_{11}(g_2) = \lambda. \quad R_{11}(g_3) = -i\epsilon. \quad R_{11}(g_4) = \phi. \quad R_{11}(g_5) = \epsilon. \quad R_{11}(g_6) = -\epsilon.$$
$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = i\epsilon. \quad R_{12}(g_4) = -i\kappa. \quad R_{12}(g_5) = \epsilon. \quad R_{12}(g_6) = -\epsilon.$$
$$R_{13}(g_2) = -\lambda. \quad R_{13}(g_3) = i\kappa. \quad R_{13}(g_4) = -i\epsilon. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = \epsilon.$$
$$R_{14}(g_2) = -\lambda. \quad R_{14}(g_3) = -i\kappa. \quad R_{14}(g_4) = i\epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(32)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = i\lambda. \quad R_9(g_3) = -\kappa. \quad R_9(g_4) = -\kappa. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = i\lambda. \quad R_{10}(g_3) = -i\phi. \quad R_{10}(g_4) = i\phi. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = \lambda. \quad R_{11}(g_3) = -i\epsilon. \quad R_{11}(g_4) = -i\kappa. \quad R_{11}(g_5) = \epsilon. \quad R_{11}(g_6) = -\epsilon.$$

$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = i\epsilon. \quad R_{12}(g_4) = i\kappa. \quad R_{12}(g_5) = \epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = -i\lambda. \quad R_{13}(g_3) = -\phi. \quad R_{13}(g_4) = -i\epsilon. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = \epsilon.$$

$$R_{14}(g_2) = -i\lambda. \quad R_{14}(g_3) = i\kappa. \quad R_{14}(g_4) = i\epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(33)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = \lambda. \quad R_9(g_3) = -i\epsilon. \quad R_9(g_4) = i\kappa. \quad R_9(g_5) = \epsilon. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = i\epsilon. \quad R_{10}(g_4) = -\phi. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = -\lambda. \quad R_{11}(g_3) = \phi. \quad R_{11}(g_4) = -i\phi. \quad R_{11}(g_5) = -\epsilon. \quad R_{11}(g_6) = -\epsilon.$$

$$R_{12}(g_2) = \lambda. \quad R_{12}(g_3) = \phi. \quad R_{12}(g_4) = i\phi. \quad R_{12}(g_5) = -\epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = -\lambda. \quad R_{13}(g_3) = i\phi. \quad R_{13}(g_4) = -i\epsilon. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = \epsilon.$$

$$R_{14}(g_2) = -\lambda. \quad R_{14}(g_3) = \kappa. \quad R_{14}(g_4) = i\epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(34)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = -\lambda. \quad R_9(g_3) = \epsilon. \quad R_9(g_4) = \kappa. \quad R_9(g_5) = \epsilon. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = -\kappa. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = -\lambda. \quad R_{11}(g_3) = -\kappa. \quad R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = -\epsilon. \quad R_{11}(g_6) = \epsilon.$$

$$R_{12}(g_2) = -\lambda. \quad R_{12}(g_3) = -\kappa. \quad R_{12}(g_4) = -\kappa. \quad R_{12}(g_5) = -\epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = \lambda. \quad R_{13}(g_3) = -\kappa. \quad R_{13}(g_4) = \kappa. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = -\epsilon.$$

$$R_{14}(g_2) = \lambda. \quad R_{14}(g_3) = \kappa. \quad R_{14}(g_4) = \epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(35)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = -\lambda. \quad R_9(g_3) = \epsilon. \quad R_9(g_4) = -\kappa. \quad R_9(g_5) = \epsilon. \quad R_9(g_6) = -\epsilon.$$

$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = -\kappa. \quad R_{10}(g_5) = \epsilon. \quad R_{10}(g_6) = -\epsilon.$$

$$R_{11}(g_2) = i\lambda. \quad R_{11}(g_3) = i\phi. \quad R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = -\epsilon. \quad R_{11}(g_6) = \epsilon.$$

$$R_{12}(g_2) = -i\lambda. \quad R_{12}(g_3) = i\phi. \quad R_{12}(g_4) = i\phi. \quad R_{12}(g_5) = -\epsilon. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = i\lambda. \quad R_{13}(g_3) = -\kappa. \quad R_{13}(g_4) = \kappa. \quad R_{13}(g_5) = -\epsilon. \quad R_{13}(g_6) = -\epsilon.$$

$$R_{14}(g_2) = -i\lambda. \quad R_{14}(g_3) = \kappa. \quad R_{14}(g_4) = \epsilon. \quad R_{14}(g_5) = -\epsilon. \quad R_{14}(g_6) = \epsilon.$$

$G_{32}^{(36)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = -i. \quad R_9(g_3) = -1. \quad R_9(g_4) = -1. \quad R_9(g_5) = -1. \quad R_9(g_6) = 1.$$

$$R_{10}(g_2) = i. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = -1. \quad R_{10}(g_5) = -1. \quad R_{10}(g_6) = 1.$$

$$R_{11}(g_2) = -i. \quad R_{11}(g_3) = -1. \quad R_{11}(g_4) = 1. \quad R_{11}(g_5) = -1. \quad R_{11}(g_6) = 1.$$

$$R_{12}(g_2) = i. \quad R_{12}(g_3) = -1. \quad R_{12}(g_4) = 1. \quad R_{12}(g_5) = -1. \quad R_{12}(g_6) = 1.$$

$$R_{13}(g_2) = -i. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = -1. \quad R_{13}(g_5) = -1. \quad R_{13}(g_6) = 1.$$

$$R_{14}(g_2) = i. \quad R_{14}(g_3) = 1. \quad R_{14}(g_4) = -1. \quad R_{14}(g_5) = -1. \quad R_{14}(g_6) = 1.$$

$$R_{15}(g_2) = -i. \quad R_{15}(g_3) = 1. \quad R_{15}(g_4) = 1. \quad R_{15}(g_5) = -1. \quad R_{15}(g_6) = 1.$$

$$R_{16}(g_2) = i. \quad R_{16}(g_3) = 1. \quad R_{16}(g_4) = 1. \quad R_{16}(g_5) = -1. \quad R_{16}(g_6) = 1.$$

$$R_{17}(g_2) = -e_8. \quad R_{17}(g_3) = -1. \quad R_{17}(g_4) = -1. \quad R_{17}(g_5) = i. \quad R_{17}(g_6) = -1.$$

$$R_{18}(g_2) = -e_8^3. \quad R_{18}(g_3) = -1. \quad R_{18}(g_4) = -1. \quad R_{18}(g_5) = -i. \quad R_{18}(g_6) = -1.$$

$$R_{19}(g_2) = e_8^3. \quad R_{19}(g_3) = -1. \quad R_{19}(g_4) = -1. \quad R_{19}(g_5) = -i. \quad R_{19}(g_6) = -1.$$

$$R_{20}(g_2) = e_8. \quad R_{20}(g_3) = -1. \quad R_{20}(g_4) = -1. \quad R_{20}(g_5) = i. \quad R_{20}(g_6) = -1.$$

$$R_{21}(g_2) = -e_8. \quad R_{21}(g_3) = -1. \quad R_{21}(g_4) = 1. \quad R_{21}(g_5) = i. \quad R_{21}(g_6) = -1.$$

$$R_{22}(g_2) = -e_8^3. \quad R_{22}(g_3) = -1. \quad R_{22}(g_4) = 1. \quad R_{22}(g_5) = -i. \quad R_{22}(g_6) = -1.$$

$$R_{23}(g_2) = e_8^3. \quad R_{23}(g_3) = -1. \quad R_{23}(g_4) = 1. \quad R_{23}(g_5) = -i. \quad R_{23}(g_6) = -1.$$

$$R_{24}(g_2) = e_8. \quad R_{24}(g_3) = -1. \quad R_{24}(g_4) = 1. \quad R_{24}(g_5) = i. \quad R_{24}(g_6) = -1.$$

$$R_{25}(g_2) = -e_8. \quad R_{25}(g_3) = 1. \quad R_{25}(g_4) = -1. \quad R_{25}(g_5) = i. \quad R_{25}(g_6) = -1.$$

$$R_{26}(g_2) = -e_8^3. \quad R_{26}(g_3) = 1. \quad R_{26}(g_4) = -1. \quad R_{26}(g_5) = -i. \quad R_{26}(g_6) = -1.$$

$$R_{27}(g_2) = e_8^3. \quad R_{27}(g_3) = 1. \quad R_{27}(g_4) = -1. \quad R_{27}(g_5) = -i. \quad R_{27}(g_6) = -1.$$

$$R_{28}(g_2) = e_8. \quad R_{28}(g_3) = 1. \quad R_{28}(g_4) = -1. \quad R_{28}(g_5) = i. \quad R_{28}(g_6) = -1.$$

$$R_{29}(g_2) = -e_8. \quad R_{29}(g_3) = 1. \quad R_{29}(g_4) = 1. \quad R_{29}(g_5) = i. \quad R_{29}(g_6) = -1.$$

$$R_{30}(g_2) = -e_8^3. \quad R_{30}(g_3) = 1. \quad R_{30}(g_4) = 1. \quad R_{30}(g_5) = -i. \quad R_{30}(g_6) = -1.$$

$$R_{31}(g_2) = e_8^3. \quad R_{31}(g_3) = 1. \quad R_{31}(g_4) = 1. \quad R_{31}(g_5) = -i. \quad R_{31}(g_6) = -1.$$

$$R_{32}(g_2) = e_8. \quad R_{32}(g_3) = 1. \quad R_{32}(g_4) = 1. \quad R_{32}(g_5) = i. \quad R_{32}(g_6) = -1.$$

$G_{32}^{(37)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=-1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=-1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=-1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$
$$R_{17}(g_2)=\begin{pmatrix}-e_8^3 & 0\\ 0 & e_8^3\end{pmatrix}.\quad R_{17}(g_3)=\begin{pmatrix}0 & e_8\\ -e_8^3 & 0\end{pmatrix}.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-i\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=\begin{pmatrix}e_8 & 0\\ 0 & -e_8\end{pmatrix}.\quad R_{18}(g_3)=\begin{pmatrix}0 & -e_8\\ e_8^3 & 0\end{pmatrix}.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=i\epsilon.\quad R_{18}(g_6)=-\epsilon.$$
$$R_{19}(g_2)=\begin{pmatrix}e_8^3 & 0\\ 0 & -e_8^3\end{pmatrix}.\quad R_{19}(g_3)=-\phi.\quad R_{19}(g_4)=\epsilon.\quad R_{19}(g_5)=-i\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=\begin{pmatrix}-e_8 & 0\\ 0 & e_8\end{pmatrix}.\quad R_{20}(g_3)=i\kappa.\quad R_{20}(g_4)=\epsilon.\quad R_{20}(g_5)=i\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(38)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=-1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=i.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=-i.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=1.\quad R_{11}(g_5)=-1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=-i.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=-1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=i.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=-i.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=i.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$

$R_{17}(g_2) = \begin{pmatrix} -e_8 & 0 \\ 0 & -e_8 \end{pmatrix}$. $R_{17}(g_3) = \lambda$. $R_{17}(g_4) = \phi$. $R_{17}(g_5) = i\epsilon$. $R_{17}(g_6) = -\epsilon$.

$R_{18}(g_2) = \begin{pmatrix} -e_8^3 & 0 \\ 0 & -e_8^3 \end{pmatrix}$. $R_{18}(g_3) = -\lambda$. $R_{18}(g_4) = -i\kappa$. $R_{18}(g_5) = -i\epsilon$. $R_{18}(g_6) = -\epsilon$.

$R_{19}(g_2) = \begin{pmatrix} e_8^3 & 0 \\ 0 & e_8^3 \end{pmatrix}$. $R_{19}(g_3) = -\lambda$. $R_{19}(g_4) = -\phi$. $R_{19}(g_5) = -i\epsilon$. $R_{19}(g_6) = -\epsilon$.

$R_{20}(g_2) = \begin{pmatrix} e_8 & 0 \\ 0 & e_8 \end{pmatrix}$. $R_{20}(g_3) = -\lambda$. $R_{20}(g_4) = \begin{pmatrix} 0 & -e_8^3 \\ e_8 & 0 \end{pmatrix}$. $R_{20}(g_5) = i\epsilon$. $R_{20}(g_6) = -\epsilon$.

$G_{32}^{(39)}$

$R_2(g_2) = -1$. $R_2(g_3) = -1$. $R_2(g_4) = -1$. $R_2(g_5) = 1$. $R_2(g_6) = 1$.

$R_3(g_2) = -1$. $R_3(g_3) = -1$. $R_3(g_4) = 1$. $R_3(g_5) = 1$. $R_3(g_6) = 1$.

$R_4(g_2) = -1$. $R_4(g_3) = 1$. $R_4(g_4) = -1$. $R_4(g_5) = 1$. $R_4(g_6) = 1$.

$R_5(g_2) = -1$. $R_5(g_3) = 1$. $R_5(g_4) = 1$. $R_5(g_5) = 1$. $R_5(g_6) = 1$.

$R_6(g_2) = 1$. $R_6(g_3) = -1$. $R_6(g_4) = -1$. $R_6(g_5) = 1$. $R_6(g_6) = 1$.

$R_7(g_2) = 1$. $R_7(g_3) = -1$. $R_7(g_4) = 1$. $R_7(g_5) = 1$. $R_7(g_6) = 1$.

$R_8(g_2) = 1$. $R_8(g_3) = 1$. $R_8(g_4) = -1$. $R_8(g_5) = 1$. $R_8(g_6) = 1$.

$R_9(g_2) = \lambda$. $R_9(g_3) = \phi$. $R_9(g_4) = -\epsilon$. $R_9(g_5) = -\epsilon$. $R_9(g_6) = \epsilon$.

$R_{10}(g_2) = \lambda$. $R_{10}(g_3) = -\phi$. $R_{10}(g_4) = \epsilon$. $R_{10}(g_5) = -\epsilon$. $R_{10}(g_6) = \epsilon$.

$R_{11}(g_2) = \begin{pmatrix} 1 & 0 \\ -\sqrt{2}i & -1 \end{pmatrix}$. $R_{11}(g_3) = \phi$. $R_{11}(g_4) = -\epsilon$. $R_{11}(g_5) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}$. $R_{11}(g_6) = -\epsilon$.

$R_{12}(g_2) = \begin{pmatrix} -1 & -\sqrt{2}i \\ 0 & 1 \end{pmatrix}$. $R_{12}(g_3) = -\phi$. $R_{12}(g_4) = -\epsilon$. $R_{12}(g_5) = \begin{pmatrix} -1 & -\sqrt{2}i \\ \sqrt{2} & 1 \end{pmatrix}$. $R_{12}(g_6) = -\epsilon$.

$R_{13}(g_2) = \begin{pmatrix} -1 & -\sqrt{2}i \\ 0 & 1 \end{pmatrix}$. $R_{13}(g_3) = \begin{pmatrix} \sqrt{2} & 1 \\ -1 & -\sqrt{2}i \end{pmatrix}$. $R_{13}(g_4) = \epsilon$.

$R_{13}(g_5) = \begin{pmatrix} 1 & \sqrt{2} \\ -\sqrt{2}i & -1 \end{pmatrix}$. $R_{13}(g_6) = -\epsilon$.

$R_{14}(g_2) = \begin{pmatrix} 1 & 0 \\ \sqrt{2} & -1 \end{pmatrix}$. $R_{14}(g_3) = \begin{pmatrix} \sqrt{2} & -1 \\ 1 & -\sqrt{2}i \end{pmatrix}$. $R_{14}(g_4) = \epsilon$.

$R_{14}(g_5) = \begin{pmatrix} -1 & \sqrt{2} \\ -\sqrt{2}i & 1 \end{pmatrix}$. $R_{14}(g_6) = -\epsilon$.

$G_{32}^{(40)}$

$R_2(g_2) = -1$. $R_2(g_3) = -1$. $R_2(g_4) = -1$. $R_2(g_5) = 1$. $R_2(g_6) = 1$.

$R_3(g_2) = -1$. $R_3(g_3) = -1$. $R_3(g_4) = 1$. $R_3(g_5) = 1$. $R_3(g_6) = 1$.

$R_4(g_2) = -1$. $R_4(g_3) = 1$. $R_4(g_4) = -1$. $R_4(g_5) = 1$. $R_4(g_6) = 1$.

$R_5(g_2) = -1$. $R_5(g_3) = 1$. $R_5(g_4) = 1$. $R_5(g_5) = 1$. $R_5(g_6) = 1$.

$R_6(g_2) = 1$. $R_6(g_3) = -1$. $R_6(g_4) = -1$. $R_6(g_5) = 1$. $R_6(g_6) = 1$.

$R_7(g_2) = 1$. $R_7(g_3) = -1$. $R_7(g_4) = 1$. $R_7(g_5) = 1$. $R_7(g_6) = 1$.

$R_8(g_2) = 1$. $R_8(g_3) = 1$. $R_8(g_4) = -1$. $R_8(g_5) = 1$. $R_8(g_6) = 1$.

$R_9(g_2) = -\lambda$. $R_9(g_3) = -\phi$. $R_9(g_4) = -\epsilon$. $R_9(g_5) = -\epsilon$. $R_9(g_6) = \epsilon$.

$$R_{10}(g_2)=\lambda.\quad R_{10}(g_3)=-\phi.\quad R_{10}(g_4)=\epsilon.\quad R_{10}(g_5)=-\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} i & 0\\ \sqrt{2} & -i\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} -\sqrt{2}i & i\\ i & \sqrt{2}\end{pmatrix}.\quad R_{11}(g_4)=-\epsilon.$$
$$R_{11}(g_5)=\begin{pmatrix} -1 & \sqrt{2}i\\ \sqrt{2}i & 1\end{pmatrix}.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=-i\lambda.\quad R_{12}(g_3)=\begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2}\\ -1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_{12}(g_4)=-\epsilon.\quad R_{12}(g_5)=-\kappa.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=-i\phi.\quad R_{13}(g_3)=\begin{pmatrix} -1/\sqrt{2} & 1/\sqrt{2}\\ 1/\sqrt{2} & 1/\sqrt{2}\end{pmatrix}.\quad R_{13}(g_4)=\epsilon.\quad R_{13}(g_5)=-\kappa.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2)=\begin{pmatrix} -i & 0\\ -\sqrt{2}i & i\end{pmatrix}.\quad R_{14}(g_3)=\begin{pmatrix} -\sqrt{2}i & i\\ i & \sqrt{2}\end{pmatrix}.\quad R_{14}(g_4)=\epsilon.$$
$$R_{14}(g_5)=\begin{pmatrix} -1 & \sqrt{2}i\\ \sqrt{2}i & 1\end{pmatrix}.\quad R_{14}(g_6)=-\epsilon.$$

$G_{32}^{(41)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=\lambda.\quad R_9(g_3)=\phi.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=-\epsilon.\quad R_9(g_6)=\epsilon.$$
$$R_{10}(g_2)=-\lambda.\quad R_{10}(g_3)=-\phi.\quad R_{10}(g_4)=\epsilon.\quad R_{10}(g_5)=-\epsilon.\quad R_{10}(g_6)=\epsilon.$$

$$R_{11}(g_2)=\begin{pmatrix} -i & \sqrt{2}i\\ 0 & i\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix} -\sqrt{2}i & i\\ -i & \sqrt{2}i\end{pmatrix}.\quad R_{11}(g_4)=-\epsilon.$$
$$R_{11}(g_5)=\begin{pmatrix} 1 & -\sqrt{2}i\\ \sqrt{2} & -1\end{pmatrix}.\quad R_{11}(g_6)=-\epsilon.$$

$$R_{12}(g_2)=\begin{pmatrix} i & 0\\ -\sqrt{2}i & -i\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix} -\sqrt{2}i & -i\\ i & \sqrt{2}i\end{pmatrix}.\quad R_{12}(g_4)=-\epsilon.$$
$$R_{12}(g_5)=\begin{pmatrix} -1 & -\sqrt{2}i\\ \sqrt{2} & 1\end{pmatrix}.\quad R_{12}(g_6)=-\epsilon.$$

$$R_{13}(g_2)=\begin{pmatrix} -i & -\sqrt{2}i\\ 0 & i\end{pmatrix}.\quad R_{13}(g_3)=\begin{pmatrix} -\sqrt{2}i & -i\\ i & \sqrt{2}i\end{pmatrix}.\quad R_{13}(g_4)=\epsilon.$$
$$R_{13}(g_5)=\begin{pmatrix} 1 & \sqrt{2}\\ -\sqrt{2}i & -1\end{pmatrix}.\quad R_{13}(g_6)=-\epsilon.$$

$$R_{14}(g_2) = \begin{pmatrix} -i & 0 \\ -\sqrt{2}i & i \end{pmatrix}. \quad R_{14}(g_3) = \begin{pmatrix} \sqrt{2}i & -i \\ i & -\sqrt{2}i \end{pmatrix}. \quad R_{14}(g_4) = \epsilon.$$

$$R_{14}(g_5) = \begin{pmatrix} -1 & \sqrt{2} \\ -\sqrt{2}i & 1 \end{pmatrix}. \quad R_{14}(g_6) = -\epsilon.$$

$G_{32}^{(42)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = \lambda. \quad R_9(g_3) = \phi. \quad R_9(g_4) = -\epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$

$$R_{10}(g_2) = -\lambda. \quad R_{10}(g_3) = -\phi. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = \lambda. \quad R_{11}(g_3) = \begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2} \\ i/\sqrt{2} & 1/\sqrt{2} \end{pmatrix}. \quad R_{11}(g_4) = -i\epsilon. \quad R_{11}(g_5) = -i\phi. \quad R_{11}(g_6) = -\epsilon.$$

$$R_{12}(g_2) = \lambda. \quad R_{12}(g_3) = \begin{pmatrix} 1/\sqrt{2} & -1/\sqrt{2} \\ i/\sqrt{2} & -1/\sqrt{2} \end{pmatrix}. \quad R_{12}(g_4) = -i\epsilon. \quad R_{12}(g_5) = i\phi. \quad R_{12}(g_6) = -\epsilon.$$

$$R_{13}(g_2) = \begin{pmatrix} 1 & \sqrt{2}i \\ 0 & -1 \end{pmatrix}. \quad R_{13}(g_3) = \begin{pmatrix} -\sqrt{2}i & -i \\ -i & \sqrt{2} \end{pmatrix}. \quad R_{13}(g_4) = i\epsilon.$$

$$R_{13}(g_5) = \begin{pmatrix} 1 & \sqrt{2}i \\ \sqrt{2}i & -1 \end{pmatrix}. \quad R_{13}(g_6) = -\epsilon.$$

$$R_{14}(g_2) = -\lambda. \quad R_{14}(g_3) = \begin{pmatrix} -1/\sqrt{2} & -1/\sqrt{2} \\ i/\sqrt{2} & 1/\sqrt{2} \end{pmatrix}. \quad R_{14}(g_4) = i\epsilon. \quad R_{14}(g_5) = -i\phi. \quad R_{14}(g_6) = -\epsilon.$$

$G_{32}^{(43)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$

$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$

$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$

$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$

$$R_9(g_2) = \lambda. \quad R_9(g_3) = \phi. \quad R_9(g_4) = \epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$

$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = \phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} 0 & e_8 & 0 & 0 \\ -e_8^3 & 0 & 0 & 0 \\ 0 & 0 & 0 & e_8^3 \\ 0 & 0 & -e_8 & 0 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -i \\ 0 & 0 & i & 0 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 0 & 0 & -i & 0 \\ 0 & 0 & 0 & -1 \\ i & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -i & 0 & 0 & 0 \\ 0 & i & 0 & 0 \\ 0 & 0 & -i & 0 \\ 0 & 0 & 0 & i \end{pmatrix}.$$

$$R_{11}(g_6) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}.$$

$G_{32}^{(44)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = 1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = -1. \quad R_4(g_5) = 1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = 1. \quad R_6(g_3) = -1. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = 1. \quad R_7(g_3) = -1. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$
$$R_8(g_2) = 1. \quad R_8(g_3) = 1. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1. \quad R_8(g_6) = 1.$$
$$R_9(g_2) = \lambda. \quad R_9(g_3) = \phi. \quad R_9(g_4) = \epsilon. \quad R_9(g_5) = -\epsilon. \quad R_9(g_6) = \epsilon.$$
$$R_{10}(g_2) = \lambda. \quad R_{10}(g_3) = -\phi. \quad R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = -\epsilon. \quad R_{10}(g_6) = \epsilon.$$

$$R_{11}(g_2) = \begin{pmatrix} 0 & 0 & 0 & -e_8 \\ 0 & 0 & i & 0 \\ 0 & -i & 0 & 0 \\ e_8^3 & 0 & 0 & 0 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 0 & -e_8^3 & 0 \\ 0 & -e_8 & 0 & 0 \\ -1 & 0 & 0 & 0 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 0 & 0 & -e_8^3 & 0 \\ 0 & 0 & 0 & -1 \\ e_8 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} i & 0 & 0 & 0 \\ 0 & -i & 0 & 0 \\ 0 & 0 & i & 0 \\ 0 & 0 & 0 & -i \end{pmatrix}.$$

$$R_{11}(g_6) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}.$$

$G_{32}^{(45)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = -1. \quad R_2(g_5) = -1. \quad R_2(g_6) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = -1. \quad R_3(g_4) = -1. \quad R_3(g_5) = 1. \quad R_3(g_6) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = -1. \quad R_4(g_6) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1. \quad R_5(g_6) = 1.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = 1. \quad R_6(g_4) = -1. \quad R_6(g_5) = -1. \quad R_6(g_6) = 1.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = 1. \quad R_7(g_4) = -1. \quad R_7(g_5) = 1. \quad R_7(g_6) = 1.$$

$R_8(g_2) = -1.\quad R_8(g_3) = 1.\quad R_8(g_4) = 1.\quad R_8(g_5) = -1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -1.\quad R_9(g_3) = 1.\quad R_9(g_4) = 1.\quad R_9(g_5) = 1.\quad R_9(g_6) = 1.$
$R_{10}(g_2) = 1.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = -1.\quad R_{10}(g_5) = -1.\quad R_{10}(g_6) = 1.$
$R_{11}(g_2) = 1.\quad R_{11}(g_3) = -1.\quad R_{11}(g_4) = -1.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = 1.$
$R_{12}(g_2) = 1.\quad R_{12}(g_3) = -1.\quad R_{12}(g_4) = 1.\quad R_{12}(g_5) = -1.\quad R_{12}(g_6) = 1.$
$R_{13}(g_2) = 1.\quad R_{13}(g_3) = -1.\quad R_{13}(g_4) = 1.\quad R_{13}(g_5) = 1.\quad R_{13}(g_6) = 1.$
$R_{14}(g_2) = 1.\quad R_{14}(g_3) = 1.\quad R_{14}(g_4) = -1.\quad R_{14}(g_5) = -1.\quad R_{14}(g_6) = 1.$
$R_{15}(g_2) = 1.\quad R_{15}(g_3) = 1.\quad R_{15}(g_4) = -1.\quad R_{15}(g_5) = 1.\quad R_{15}(g_6) = 1.$
$R_{16}(g_2) = 1.\quad R_{16}(g_3) = 1.\quad R_{16}(g_4) = 1.\quad R_{16}(g_5) = -1.\quad R_{16}(g_6) = 1.$
$R_{17}(g_2) = -i.\quad R_{17}(g_3) = -1.\quad R_{17}(g_4) = -1.\quad R_{17}(g_5) = -1.\quad R_{17}(g_6) = -1.$
$R_{18}(g_2) = i.\quad R_{18}(g_3) = -1.\quad R_{18}(g_4) = -1.\quad R_{18}(g_5) = -1.\quad R_{18}(g_6) = -1.$
$R_{19}(g_2) = -i.\quad R_{19}(g_3) = -1.\quad R_{19}(g_4) = -1.\quad R_{19}(g_5) = 1.\quad R_{19}(g_6) = -1.$
$R_{20}(g_2) = i.\quad R_{20}(g_3) = -1.\quad R_{20}(g_4) = -1.\quad R_{20}(g_5) = 1.\quad R_{20}(g_6) = -1.$
$R_{21}(g_2) = -i.\quad R_{21}(g_3) = -1.\quad R_{21}(g_4) = 1.\quad R_{21}(g_5) = -1.\quad R_{21}(g_6) = -1.$
$R_{22}(g_2) = i.\quad R_{22}(g_3) = -1.\quad R_{22}(g_4) = 1.\quad R_{22}(g_5) = -1.\quad R_{22}(g_6) = -1.$
$R_{23}(g_2) = -i.\quad R_{23}(g_3) = -1.\quad R_{23}(g_4) = 1.\quad R_{23}(g_5) = 1.\quad R_{23}(g_6) = -1.$
$R_{24}(g_2) = i.\quad R_{24}(g_3) = -1.\quad R_{24}(g_4) = 1.\quad R_{24}(g_5) = 1.\quad R_{24}(g_6) = -1.$
$R_{25}(g_2) = -i.\quad R_{25}(g_3) = 1.\quad R_{25}(g_4) = -1.\quad R_{25}(g_5) = -1.\quad R_{25}(g_6) = -1.$
$R_{26}(g_2) = i.\quad R_{26}(g_3) = 1.\quad R_{26}(g_4) = -1.\quad R_{26}(g_5) = -1.\quad R_{26}(g_6) = -1.$
$R_{27}(g_2) = -i.\quad R_{27}(g_3) = 1.\quad R_{27}(g_4) = -1.\quad R_{27}(g_5) = 1.\quad R_{27}(g_6) = -1.$
$R_{28}(g_2) = i.\quad R_{28}(g_3) = 1.\quad R_{28}(g_4) = -1.\quad R_{28}(g_5) = 1.\quad R_{28}(g_6) = -1.$
$R_{29}(g_2) = -i.\quad R_{29}(g_3) = 1.\quad R_{29}(g_4) = 1.\quad R_{29}(g_5) = -1.\quad R_{29}(g_6) = -1.$
$R_{30}(g_2) = i.\quad R_{30}(g_3) = 1.\quad R_{30}(g_4) = 1.\quad R_{30}(g_5) = -1.\quad R_{30}(g_6) = -1.$
$R_{31}(g_2) = -i.\quad R_{31}(g_3) = 1.\quad R_{31}(g_4) = 1.\quad R_{31}(g_5) = 1.\quad R_{31}(g_6) = -1.$
$R_{32}(g_2) = i.\quad R_{32}(g_3) = 1.\quad R_{32}(g_4) = 1.\quad R_{32}(g_5) = 1.\quad R_{32}(g_6) = -1.$

$G_{32}^{(46)}$

$R_2(g_2) = -1.\quad R_2(g_3) = -1.\quad R_2(g_4) = -1.\quad R_2(g_5) = -1.\quad R_2(g_6) = 1.$
$R_3(g_2) = -1.\quad R_3(g_3) = -1.\quad R_3(g_4) = -1.\quad R_3(g_5) = 1.\quad R_3(g_6) = 1.$
$R_4(g_2) = -1.\quad R_4(g_3) = -1.\quad R_4(g_4) = 1.\quad R_4(g_5) = -1.\quad R_4(g_6) = 1.$
$R_5(g_2) = -1.\quad R_5(g_3) = -1.\quad R_5(g_4) = 1.\quad R_5(g_5) = 1.\quad R_5(g_6) = 1.$
$R_6(g_2) = -1.\quad R_6(g_3) = 1.\quad R_6(g_4) = -1.\quad R_6(g_5) = -1.\quad R_6(g_6) = 1.$
$R_7(g_2) = -1.\quad R_7(g_3) = 1.\quad R_7(g_4) = -1.\quad R_7(g_5) = 1.\quad R_7(g_6) = 1.$
$R_8(g_2) = -1.\quad R_8(g_3) = 1.\quad R_8(g_4) = 1.\quad R_8(g_5) = -1.\quad R_8(g_6) = 1.$
$R_9(g_2) = -1.\quad R_9(g_3) = 1.\quad R_9(g_4) = 1.\quad R_9(g_5) = 1.\quad R_9(g_6) = 1.$
$R_{10}(g_2) = 1.\quad R_{10}(g_3) = -1.\quad R_{10}(g_4) = -1.\quad R_{10}(g_5) = -1.\quad R_{10}(g_6) = 1.$
$R_{11}(g_2) = 1.\quad R_{11}(g_3) = -1.\quad R_{11}(g_4) = -1.\quad R_{11}(g_5) = 1.\quad R_{11}(g_6) = 1.$
$R_{12}(g_2) = 1.\quad R_{12}(g_3) = -1.\quad R_{12}(g_4) = 1.\quad R_{12}(g_5) = -1.\quad R_{12}(g_6) = 1.$
$R_{13}(g_2) = 1.\quad R_{13}(g_3) = -1.\quad R_{13}(g_4) = 1.\quad R_{13}(g_5) = 1.\quad R_{13}(g_6) = 1.$
$R_{14}(g_2) = 1.\quad R_{14}(g_3) = 1.\quad R_{14}(g_4) = -1.\quad R_{14}(g_5) = -1.\quad R_{14}(g_6) = 1.$
$R_{15}(g_2) = 1.\quad R_{15}(g_3) = 1.\quad R_{15}(g_4) = -1.\quad R_{15}(g_5) = 1.\quad R_{15}(g_6) = 1.$

$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$
$$R_{17}(g_2)=-\lambda.\quad R_{17}(g_3)=\phi.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=-\lambda.\quad R_{18}(g_3)=\phi.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=\epsilon.\quad R_{18}(g_6)=-\epsilon.$$
$$R_{19}(g_2)=-\lambda.\quad R_{19}(g_3)=\phi.\quad R_{19}(g_4)=\epsilon.\quad R_{19}(g_5)=-\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=\lambda.\quad R_{20}(g_3)=-\phi.\quad R_{20}(g_4)=\epsilon.\quad R_{20}(g_5)=\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(47)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=-1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=1.\quad R_6(g_4)=-1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$
$$R_{17}(g_2)=-i\lambda.\quad R_{17}(g_3)=-\kappa.\quad R_{17}(g_4)=-\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=i\lambda.\quad R_{18}(g_3)=-\kappa.\quad R_{18}(g_4)=-\epsilon.\quad R_{18}(g_5)=\epsilon.\quad R_{18}(g_6)=-\epsilon.$$
$$R_{19}(g_2)=-i\lambda.\quad R_{19}(g_3)=\kappa.\quad R_{19}(g_4)=\epsilon.\quad R_{19}(g_5)=-\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=-i\lambda.\quad R_{20}(g_3)=-i\phi.\quad R_{20}(g_4)=\epsilon.\quad R_{20}(g_5)=\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(48)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=-1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=1.\quad R_6(g_4)=-1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$

$$R_{15}(g_2)=1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$
$$R_{17}(g_2)=-\lambda.\quad R_{17}(g_3)=-i\kappa.\quad R_{17}(g_4)=-i\epsilon.\quad R_{17}(g_5)=-\epsilon.\quad R_{17}(g_6)=-\epsilon.$$
$$R_{18}(g_2)=\lambda.\quad R_{18}(g_3)=\phi.\quad R_{18}(g_4)=i\epsilon.\quad R_{18}(g_5)=-\epsilon.\quad R_{18}(g_6)=-\epsilon.$$
$$R_{19}(g_2)=-\lambda.\quad R_{19}(g_3)=-\phi.\quad R_{19}(g_4)=-i\epsilon.\quad R_{19}(g_5)=\epsilon.\quad R_{19}(g_6)=-\epsilon.$$
$$R_{20}(g_2)=-\lambda.\quad R_{20}(g_3)=-i\kappa.\quad R_{20}(g_4)=i\epsilon.\quad R_{20}(g_5)=\epsilon.\quad R_{20}(g_6)=-\epsilon.$$

$G_{32}^{(49)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=-1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=1.\quad R_6(g_4)=-1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$

$$R_{17}(g_2)=\begin{pmatrix}0&0&-1&0\\0&0&0&-1\\-1&0&0&0\\0&-1&0&0\end{pmatrix}.\quad R_{17}(g_3)=\begin{pmatrix}1&0&0&0\\0&1&0&0\\0&0&-1&0\\0&0&0&-1\end{pmatrix}.$$
$$R_{17}(g_4)=\begin{pmatrix}0&0&1&0\\0&0&0&-1\\1&0&0&0\\0&-1&0&0\end{pmatrix}.\quad R_{17}(g_5)=\begin{pmatrix}0&1&0&0\\1&0&0&0\\0&0&0&-1\\0&0&-1&0\end{pmatrix}.$$
$$R_{17}(g_6)=\begin{pmatrix}-1&0&0&0\\0&-1&0&0\\0&0&-1&0\\0&0&0&-1\end{pmatrix}.$$

$G_{32}^{(50)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.\quad R_2(g_6)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=-1.\quad R_4(g_6)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=1.\quad R_6(g_4)=-1.\quad R_6(g_5)=-1.\quad R_6(g_6)=1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=1.\quad R_8(g_4)=1.\quad R_8(g_5)=-1.\quad R_8(g_6)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=1.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=1.\quad R_{12}(g_5)=-1.\quad R_{12}(g_6)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=-1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=1.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=-1.\quad R_{15}(g_5)=1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=-1.\quad R_{16}(g_6)=1.$$

$$R_{17}(g_2)=\begin{pmatrix}0&0&0&-i\\0&0&i&0\\0&-i&0&0\\i&0&0&0\end{pmatrix}.\quad R_{17}(g_3)=\begin{pmatrix}-i&0&0&0\\0&i&0&0\\0&0&-i&0\\0&0&0&i\end{pmatrix}.$$

$$R_{17}(g_4)=\begin{pmatrix}0&0&0&-1\\0&0&-1&0\\0&1&0&0\\1&0&0&0\end{pmatrix}.\quad R_{17}(g_5)=\begin{pmatrix}0&0&1&0\\0&0&0&-1\\1&0&0&0\\0&-1&0&0\end{pmatrix}.$$

$$R_{17}(g_6)=\begin{pmatrix}-1&0&0&0\\0&-1&0&0\\0&0&-1&0\\0&0&0&-1\end{pmatrix}.$$

$G_{32}^{(51)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=-1.\quad R_2(g_6)=-1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=-1.\quad R_3(g_5)=-1.\quad R_3(g_6)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=-1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.\quad R_4(g_6)=-1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.\quad R_5(g_6)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=-1.\quad R_6(g_4)=1.\quad R_6(g_5)=-1.\quad R_6(g_6)=-1.$$
$$R_7(g_2)=-1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=-1.\quad R_7(g_6)=1.$$
$$R_8(g_2)=-1.\quad R_8(g_3)=-1.\quad R_8(g_4)=1.\quad R_8(g_5)=1.\quad R_8(g_6)=-1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=-1.\quad R_9(g_4)=1.\quad R_9(g_5)=1.\quad R_9(g_6)=1.$$
$$R_{10}(g_2)=-1.\quad R_{10}(g_3)=1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=-1.\quad R_{10}(g_6)=-1.$$
$$R_{11}(g_2)=-1.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=-1.\quad R_{11}(g_6)=1.$$
$$R_{12}(g_2)=-1.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=-1.\quad R_{12}(g_5)=1.\quad R_{12}(g_6)=-1.$$

$$R_{13}(g_2)=-1.\quad R_{13}(g_3)=1.\quad R_{13}(g_4)=-1.\quad R_{13}(g_5)=1.\quad R_{13}(g_6)=1.$$
$$R_{14}(g_2)=-1.\quad R_{14}(g_3)=1.\quad R_{14}(g_4)=1.\quad R_{14}(g_5)=-1.\quad R_{14}(g_6)=-1.$$
$$R_{15}(g_2)=-1.\quad R_{15}(g_3)=1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=-1.\quad R_{15}(g_6)=1.$$
$$R_{16}(g_2)=-1.\quad R_{16}(g_3)=1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=1.\quad R_{16}(g_6)=-1.$$
$$R_{17}(g_2)=-1.\quad R_{17}(g_3)=1.\quad R_{17}(g_4)=1.\quad R_{17}(g_5)=1.\quad R_{17}(g_6)=1.$$
$$R_{18}(g_2)=1.\quad R_{18}(g_3)=-1.\quad R_{18}(g_4)=-1.\quad R_{18}(g_5)=-1.\quad R_{18}(g_6)=-1.$$
$$R_{19}(g_2)=1.\quad R_{19}(g_3)=-1.\quad R_{19}(g_4)=-1.\quad R_{19}(g_5)=-1.\quad R_{19}(g_6)=1.$$
$$R_{20}(g_2)=1.\quad R_{20}(g_3)=-1.\quad R_{20}(g_4)=-1.\quad R_{20}(g_5)=1.\quad R_{20}(g_6)=-1.$$
$$R_{21}(g_2)=1.\quad R_{21}(g_3)=-1.\quad R_{21}(g_4)=-1.\quad R_{21}(g_5)=1.\quad R_{21}(g_6)=1.$$
$$R_{22}(g_2)=1.\quad R_{22}(g_3)=-1.\quad R_{22}(g_4)=1.\quad R_{22}(g_5)=-1.\quad R_{22}(g_6)=-1.$$
$$R_{23}(g_2)=1.\quad R_{23}(g_3)=-1.\quad R_{23}(g_4)=1.\quad R_{23}(g_5)=-1.\quad R_{23}(g_6)=1.$$
$$R_{24}(g_2)=1.\quad R_{24}(g_3)=-1.\quad R_{24}(g_4)=1.\quad R_{24}(g_5)=1.\quad R_{24}(g_6)=-1.$$
$$R_{25}(g_2)=1.\quad R_{25}(g_3)=-1.\quad R_{25}(g_4)=1.\quad R_{25}(g_5)=1.\quad R_{25}(g_6)=1.$$
$$R_{26}(g_2)=1.\quad R_{26}(g_3)=1.\quad R_{26}(g_4)=-1.\quad R_{26}(g_5)=-1.\quad R_{26}(g_6)=-1.$$
$$R_{27}(g_2)=1.\quad R_{27}(g_3)=1.\quad R_{27}(g_4)=-1.\quad R_{27}(g_5)=-1.\quad R_{27}(g_6)=1.$$
$$R_{28}(g_2)=1.\quad R_{28}(g_3)=1.\quad R_{28}(g_4)=-1.\quad R_{28}(g_5)=1.\quad R_{28}(g_6)=-1.$$
$$R_{29}(g_2)=1.\quad R_{29}(g_3)=1.\quad R_{29}(g_4)=-1.\quad R_{29}(g_5)=1.\quad R_{29}(g_6)=1.$$
$$R_{30}(g_2)=1.\quad R_{30}(g_3)=1.\quad R_{30}(g_4)=1.\quad R_{30}(g_5)=-1.\quad R_{30}(g_6)=-1.$$
$$R_{31}(g_2)=1.\quad R_{31}(g_3)=1.\quad R_{31}(g_4)=1.\quad R_{31}(g_5)=-1.\quad R_{31}(g_6)=1.$$
$$R_{32}(g_2)=1.\quad R_{32}(g_3)=1.\quad R_{32}(g_4)=1.\quad R_{32}(g_5)=1.\quad R_{32}(g_6)=-1.$$

2.33. **Order 33.** $G_{33}^{(1)}$

$$R_2(g_2)=1.\quad R_2(g_3)=e_{11}^{10}.$$
$$R_3(g_2)=1.\quad R_3(g_3)=e_{11}^{9}.$$
$$R_4(g_2)=1.\quad R_4(g_3)=e_{11}^{8}.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_{11}^{7}.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_{11}^{6}.$$
$$R_7(g_2)=1.\quad R_7(g_3)=e_{11}^{5}.$$
$$R_8(g_2)=1.\quad R_8(g_3)=e_{11}^{4}.$$
$$R_9(g_2)=1.\quad R_9(g_3)=e_{11}^{3}.$$
$$R_{10}(g_2)=1.\quad R_{10}(g_3)=e_{11}^{2}.$$
$$R_{11}(g_2)=1.\quad R_{11}(g_3)=e_{11}.$$
$$R_{12}(g_2)=e_3^2.\quad R_{12}(g_3)=1.$$
$$R_{13}(g_2)=e_3.\quad R_{13}(g_3)=1.$$
$$R_{14}(g_2)=e_3^2.\quad R_{14}(g_3)=e_{11}^{10}.$$
$$R_{15}(g_2)=e_3^2.\quad R_{15}(g_3)=e_{11}^{9}.$$
$$R_{16}(g_2)=e_3^2.\quad R_{16}(g_3)=e_{11}^{8}.$$
$$R_{17}(g_2)=e_3^2.\quad R_{17}(g_3)=e_{11}^{7}.$$
$$R_{18}(g_2)=e_3^2.\quad R_{18}(g_3)=e_{11}^{6}.$$
$$R_{19}(g_2)=e_3^2.\quad R_{19}(g_3)=e_{11}^{5}.$$

$$R_{20}(g_2) = e_3^2. \quad R_{20}(g_3) = e_{11}^4.$$
$$R_{21}(g_2) = e_3^2. \quad R_{21}(g_3) = e_{11}^3.$$
$$R_{22}(g_2) = e_3^2. \quad R_{22}(g_3) = e_{11}^2.$$
$$R_{23}(g_2) = e_3^2. \quad R_{23}(g_3) = e_{11}.$$
$$R_{24}(g_2) = e_3. \quad R_{24}(g_3) = e_{11}^{10}.$$
$$R_{25}(g_2) = e_3. \quad R_{25}(g_3) = e_{11}^9.$$
$$R_{26}(g_2) = e_3. \quad R_{26}(g_3) = e_{11}^8.$$
$$R_{27}(g_2) = e_3. \quad R_{27}(g_3) = e_{11}^7.$$
$$R_{28}(g_2) = e_3. \quad R_{28}(g_3) = e_{11}^6.$$
$$R_{29}(g_2) = e_3. \quad R_{29}(g_3) = e_{11}^5.$$
$$R_{30}(g_2) = e_3. \quad R_{30}(g_3) = e_{11}^4.$$
$$R_{31}(g_2) = e_3. \quad R_{31}(g_3) = e_{11}^3.$$
$$R_{32}(g_2) = e_3. \quad R_{32}(g_3) = e_{11}^2.$$
$$R_{33}(g_2) = e_3. \quad R_{33}(g_3) = e_{11}.$$

2.34. **Order 34.** $G_{34}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$

$$R_3(g_2) = \begin{pmatrix} \alpha_{34,1} & \alpha_{34,2} \\ -\alpha_{34,1} & -\alpha_{34,1} \end{pmatrix}. \quad R_3(g_3) = \begin{pmatrix} -e_{17}^4 - e_{17}^{13} & \alpha_{34,3} \\ -\alpha_{34,3} & e_{17}^4 + e_{17}^5 + e_{17}^{12} + e_{17}^{13} \end{pmatrix}.$$

Constants:

$$\alpha_{34,1} \equiv e_{17}^3 + e_{17}^4 + e_{17}^5 + e_{17}^6 + e_{17}^{11} + e_{17}^{12} + e_{17}^{13} + e_{17}^{14};$$
$$\alpha_{34,2} \equiv e_{17}^2 + e_{17}^3 + e_{17}^4 + e_{17}^5 + e_{17}^6 + e_{17}^{11} + e_{17}^{12} + e_{17}^{13} + e_{17}^{14} + e_{17}^{15};$$
$$\alpha_{34,3} \equiv -e_{17} - e_{17}^2 - e_{17}^3 - e_{17}^4 - e_{17}^5 - e_{17}^6 - e_{17}^7 - e_{17}^{10} - e_{17}^{11} - e_{17}^{12} - e_{17}^{13} - e_{17}^{14} - e_{17}^{15} - e_{17}^{16}.$$

$$R_4(g_2) = \begin{pmatrix} \alpha_{34,4} & \alpha_{34,5} \\ -\alpha_{34,4} & -\alpha_{34,4} \end{pmatrix}. \quad R_4(g_3) = \begin{pmatrix} \alpha_{34,6} & -e_{17}^7 - e_{17}^{10} \\ e_{17}^7 + e_{17}^{10} & -1 \end{pmatrix}.$$

Constants:

$$\alpha_{34,4} \equiv e_{17} + e_{17}^2 + e_{17}^4 + e_{17}^7 + e_{17}^{10} + e_{17}^{13} + e_{17}^{15} + e_{17}^{16};$$
$$\alpha_{34,5} \equiv e_{17} + e_{17}^2 + e_{17}^4 + e_{17}^5 + e_{17}^7 + e_{17}^{10} + e_{17}^{12} + e_{17}^{13} + e_{17}^{15} + e_{17}^{16};$$
$$\alpha_{34,6} \equiv -e_{17} - e_{17}^2 - e_{17}^4 - e_{17}^5 - e_{17}^6 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{11} - e_{17}^{12} - e_{17}^{13} - e_{17}^{15} - e_{17}^{16}.$$

$$R_5(g_2) = \begin{pmatrix} \alpha_{34,7} & e_{17}^2 + e_{17}^3 + e_{17}^8 + e_{17}^9 + e_{17}^{14} + e_{17}^{15} \\ -e_{17}^3 - e_{17}^8 - e_{17}^9 - e_{17}^{14} & -\alpha_{34,7} \end{pmatrix}.$$

$$R_5(g_3) = \begin{pmatrix} -1 & e_{17}^3 + e_{17}^{14} \\ -e_{17}^3 - e_{17}^{14} & \alpha_{34,8} \end{pmatrix}.$$

Constants:

$$\alpha_{34,7} \equiv e_{17} + e_{17}^2 + e_{17}^3 + e_{17}^4 + e_{17}^7 + e_{17}^8 + e_{17}^9 + e_{17}^{10} + e_{17}^{13} + e_{17}^{14} + e_{17}^{15} + e_{17}^{16};$$
$$\alpha_{34,8} \equiv -e_{17} - e_{17}^2 - e_{17}^3 - e_{17}^4 - e_{17}^5 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{12} - e_{17}^{13} - e_{17}^{14} - e_{17}^{15} - e_{17}^{16}.$$

$$R_6(g_2) = \begin{pmatrix} \alpha_{34,9} & e_{17}^7 + e_{17}^8 + e_{17}^9 + e_{17}^{10} \\ -e_{17}^8 - e_{17}^9 & -\alpha_{34,9} \end{pmatrix}.$$

$$R_6(g_3) = \begin{pmatrix} \alpha_{34,10} & -e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} \\ e_{17}^7 + e_{17}^8 + e_{17}^9 + e_{17}^{10} & \alpha_{34,9} \end{pmatrix}.$$

Constants:

$$\alpha_{34,9} \equiv e_{17}^2 + e_{17}^3 + e_{17}^4 + e_{17}^5 + e_{17}^6 + e_{17}^7 + e_{17}^8 + e_{17}^9 + e_{17}^{10} + e_{17}^{11} + e_{17}^{12} + e_{17}^{13} + e_{17}^{14} + e_{17}^{15};$$

$$\alpha_{34,10} \equiv -e_{17}^3 - e_{17}^4 - e_{17}^5 - e_{17}^6 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{11} - e_{17}^{12} - e_{17}^{13} - e_{17}^{14}.$$

$$R_7(g_2) = \begin{pmatrix} \alpha_{34,11} & -e_{17} - e_{17}^{16} \\ e_{17} + e_{17}^3 + e_{17}^{14} + e_{17}^{16} & -\alpha_{34,11} \end{pmatrix}.$$

$$R_7(g_3) = \begin{pmatrix} -e_{17} - e_{17}^3 - e_{17}^5 - e_{17}^{12} - e_{17}^{14} - e_{17}^{16} & \alpha_{34,12} \\ -\alpha_{34,12} & e_{17} + e_{17}^3 + e_{17}^5 + e_{17}^7 + e_{17}^{10} + e_{17}^{12} + e_{17}^{14} + e_{17}^{16} \end{pmatrix}.$$

Constants:

$$\alpha_{34,11} \equiv -e_{17} - e_{17}^3 - e_{17}^4 - e_{17}^5 - e_{17}^6 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{11} - e_{17}^{12} - e_{17}^{13} - e_{17}^{14} - e_{17}^{16};$$

$$\alpha_{34,12} \equiv -e_{17} - e_{17}^3 - e_{17}^5 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{12} - e_{17}^{14} - e_{17}^{16}.$$

$$R_8(g_2) = \begin{pmatrix} 1 & 0 \\ e_{17}^4 + e_{17}^{13} & -1 \end{pmatrix}. \quad R_8(g_3) = \begin{pmatrix} -1 & e_{17}^4 + e_{17}^{13} \\ -e_{17}^4 - e_{17}^{13} & \alpha_{34,3} \end{pmatrix}.$$

$$R_9(g_2) = \begin{pmatrix} \alpha_{34,13} & -e_{17} - e_{17}^3 - e_{17}^{14} - e_{17}^{16} \\ e_{17} + e_{17}^3 + e_{17}^5 + e_{17}^{12} + e_{17}^{14} + e_{17}^{16} & -\alpha_{34,13} \end{pmatrix}.$$

$$R_9(g_3) = \begin{pmatrix} -\alpha_{34,11} & e_{17} + e_{17}^3 + e_{17}^{14} + e_{17}^{16} \\ -e_{17} - e_{17}^3 - e_{17}^{14} - e_{17}^{16} & \alpha_{34,13} \end{pmatrix}.$$

Constants:

$$\alpha_{34,13} \equiv -e_{17} - e_{17}^3 - e_{17}^5 - e_{17}^6 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{11} - e_{17}^{12} - e_{17}^{14} - e_{17}^{16}.$$

$$R_{10}(g_2) = \begin{pmatrix} \alpha_{34,8} & -e_{17}^3 - e_{17}^{14} \\ e_{17}^3 + e_{17}^8 + e_{17}^9 + e_{17}^{14} & -\alpha_{34,8} \end{pmatrix}.$$

$$R_{10}(g_3) = \begin{pmatrix} \alpha_{34,15} & -e_{17}^2 - e_{17}^3 - e_{17}^8 - e_{17}^9 - e_{17}^{14} - e_{17}^{15} \\ e_{17}^2 + e_{17}^3 + e_{17}^8 + e_{17}^9 + e_{17}^{14} + e_{17}^{15} & \alpha_{34,7} \end{pmatrix}.$$

Constants:

$$\alpha_{34,14} \equiv -e_{17}^2 - e_{17}^3 - e_{17}^4 - e_{17}^7 - e_{17}^8 - e_{17}^9 - e_{17}^{10} - e_{17}^{13} - e_{17}^{14} - e_{17}^{15}.$$

$G_{34}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_{17}^{16}.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_{17}^{15}.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = e_{17}^{14}.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = e_{17}^{13}.$$

$$R_{7}(g_2) = -1. \quad R_{7}(g_3) = e_{17}^{12}.$$
$$R_{8}(g_2) = -1. \quad R_{8}(g_3) = e_{17}^{11}.$$
$$R_{9}(g_2) = -1. \quad R_{9}(g_3) = e_{17}^{10}.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_{17}^{9}.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = e_{17}^{8}.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = e_{17}^{7}.$$
$$R_{13}(g_2) = -1. \quad R_{13}(g_3) = e_{17}^{6}.$$
$$R_{14}(g_2) = -1. \quad R_{14}(g_3) = e_{17}^{5}.$$
$$R_{15}(g_2) = -1. \quad R_{15}(g_3) = e_{17}^{4}.$$
$$R_{16}(g_2) = -1. \quad R_{16}(g_3) = e_{17}^{3}.$$
$$R_{17}(g_2) = -1. \quad R_{17}(g_3) = e_{17}^{2}.$$
$$R_{18}(g_2) = -1. \quad R_{18}(g_3) = e_{17}.$$
$$R_{19}(g_2) = 1. \quad R_{19}(g_3) = e_{17}^{16}.$$
$$R_{20}(g_2) = 1. \quad R_{20}(g_3) = e_{17}^{15}.$$
$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = e_{17}^{14}.$$
$$R_{22}(g_2) = 1. \quad R_{22}(g_3) = e_{17}^{13}.$$
$$R_{23}(g_2) = 1. \quad R_{23}(g_3) = e_{17}^{12}.$$
$$R_{24}(g_2) = 1. \quad R_{24}(g_3) = e_{17}^{11}.$$
$$R_{25}(g_2) = 1. \quad R_{25}(g_3) = e_{17}^{10}.$$
$$R_{26}(g_2) = 1. \quad R_{26}(g_3) = e_{17}^{9}.$$
$$R_{27}(g_2) = 1. \quad R_{27}(g_3) = e_{17}^{8}.$$
$$R_{28}(g_2) = 1. \quad R_{28}(g_3) = e_{17}^{7}.$$
$$R_{29}(g_2) = 1. \quad R_{29}(g_3) = e_{17}^{6}.$$
$$R_{30}(g_2) = 1. \quad R_{30}(g_3) = e_{17}^{5}.$$
$$R_{31}(g_2) = 1. \quad R_{31}(g_3) = e_{17}^{4}.$$
$$R_{32}(g_2) = 1. \quad R_{32}(g_3) = e_{17}^{3}.$$
$$R_{33}(g_2) = 1. \quad R_{33}(g_3) = e_{17}^{2}.$$
$$R_{34}(g_2) = 1. \quad R_{34}(g_3) = e_{17}.$$

2.35. **Order 35.** $G_{35}^{(1)}$

$$
\begin{array}{rr}
R_2(g_2) = 1. & R_2(g_3) = e_7^6. \\
R_3(g_2) = 1. & R_3(g_3) = e_7^5. \\
R_4(g_2) = 1. & R_4(g_3) = e_7^4. \\
R_5(g_2) = 1. & R_5(g_3) = e_7^3. \\
R_6(g_2) = 1. & R_6(g_3) = e_7^2. \\
R_7(g_2) = 1. & R_7(g_3) = e_7. \\
R_8(g_2) = e_5^4. & R_8(g_3) = 1. \\
R_9(g_2) = e_5^3. & R_9(g_3) = 1. \\
R_{10}(g_2) = e_5^2. & R_{10}(g_3) = 1. \\
R_{11}(g_2) = e_5. & R_{11}(g_3) = 1. \\
R_{12}(g_2) = e_5^4. & R_{12}(g_3) = e_7^6. \\
R_{13}(g_2) = e_5^4. & R_{13}(g_3) = e_7^5. \\
R_{14}(g_2) = e_5^4. & R_{14}(g_3) = e_7^4. \\
R_{15}(g_2) = e_5^4. & R_{15}(g_3) = e_7^3. \\
R_{16}(g_2) = e_5^4. & R_{16}(g_3) = e_7^2. \\
R_{17}(g_2) = e_5^4. & R_{17}(g_3) = e_7. \\
R_{18}(g_2) = e_5^3. & R_{18}(g_3) = e_7^6. \\
R_{19}(g_2) = e_5^3. & R_{19}(g_3) = e_7^5. \\
R_{20}(g_2) = e_5^3. & R_{20}(g_3) = e_7^4. \\
R_{21}(g_2) = e_5^3. & R_{21}(g_3) = e_7^3. \\
R_{22}(g_2) = e_5^3. & R_{22}(g_3) = e_7^2. \\
R_{23}(g_2) = e_5^3. & R_{23}(g_3) = e_7. \\
R_{24}(g_2) = e_5^2. & R_{24}(g_3) = e_7^6. \\
R_{25}(g_2) = e_5^2. & R_{25}(g_3) = e_7^5. \\
R_{26}(g_2) = e_5^2. & R_{26}(g_3) = e_7^4. \\
R_{27}(g_2) = e_5^2. & R_{27}(g_3) = e_7^3. \\
R_{28}(g_2) = e_5^2. & R_{28}(g_3) = e_7^2. \\
R_{29}(g_2) = e_5^2. & R_{29}(g_3) = e_7. \\
R_{30}(g_2) = e_5. & R_{30}(g_3) = e_7^6. \\
R_{31}(g_2) = e_5. & R_{31}(g_3) = e_7^5. \\
R_{32}(g_2) = e_5. & R_{32}(g_3) = e_7^4. \\
R_{33}(g_2) = e_5. & R_{33}(g_3) = e_7^3. \\
R_{34}(g_2) = e_5. & R_{34}(g_3) = e_7^2. \\
R_{35}(g_2) = e_5. & R_{35}(g_3) = e_7.
\end{array}
$$

2.36. **Order 36.** $G_{36}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$

$$R_3(g_2)=-i.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$

$$R_4(g_2)=i.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$

$$R_5(g_2)=\begin{pmatrix}-1&-1\\0&1\end{pmatrix}.\quad R_5(g_3)=\epsilon.\quad R_5(g_4)=\begin{pmatrix}-1&-1\\1&0\end{pmatrix}.\quad R_5(g_5)=\epsilon.$$

$$R_6(g_2)=\begin{pmatrix}-i&-1\\0&i\end{pmatrix}.\quad R_6(g_3)=-\epsilon.\quad R_6(g_4)=\begin{pmatrix}0&-i\\-i&-1\end{pmatrix}.\quad R_6(g_5)=\epsilon.$$

$$R_7(g_2)=\begin{pmatrix}-e_9^3+e_9^4+e_9^5-e_9^6 & -e_9^2-e_9^7\\ e_9^2+e_9^3+e_9^6+e_9^7 & e_9^3-e_9^4-e_9^5+e_9^6\end{pmatrix}.\quad R_7(g_3)=\epsilon.$$

$$R_7(g_4)=\begin{pmatrix}e_9^2+e_9^7&-1\\1&0\end{pmatrix}.\quad R_7(g_5)=\begin{pmatrix}-e_9^2-e_9^7 & -e_9^3+e_9^4+e_9^5-e_9^6\\ e_9^3-e_9^4-e_9^5+e_9^6 & e_9^2+e_9^3+e_9^6+e_9^7\end{pmatrix}.$$

$$R_8(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_8(g_3)=\epsilon.$$

$$R_8(g_4)=\begin{pmatrix}(-2e_9^2-e_9^4-e_9^5-2e_9^7)/3 & -2(\Re e_9^2+\Re e_{18})/3\\ (e_9^2-e_9^4-e_9^5+e_9^7)/3 & (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3\end{pmatrix}.\quad R_8(g_5)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$

$$R_9(g_2)=\begin{pmatrix}-e_9^2-e_9^7 & -e_9^3+e_9^4+e_9^5-e_9^6\\ -1 & e_9^2+e_9^7\end{pmatrix}.\quad R_9(g_3)=\epsilon.$$

$$R_9(g_4)=\begin{pmatrix}-e_9^3+e_9^4+e_9^5-e_9^6 & -e_9^2-e_9^7\\ e_9^2+e_9^7 & -1\end{pmatrix}.\quad R_9(g_5)=\begin{pmatrix}e_9^2+e_9^3+e_9^6+e_9^7 & e_9^3-e_9^4-e_9^5+e_9^6\\ -e_9^3+e_9^4+e_9^5-e_9^6 & -e_9^2-e_9^7\end{pmatrix}.$$

$$R_{10}(g_2)=\begin{pmatrix}i&0\\i&-i\end{pmatrix}.\quad R_{10}(g_3)=-\epsilon.$$

$$R_{10}(g_4)=\begin{pmatrix}(2e_9^2+e_9^4+e_9^5+2e_9^7)/3 & (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3\\ (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 & (e_9^2-e_9^4-e_9^5+e_9^7)/3\end{pmatrix}.\quad R_{10}(g_5)=\begin{pmatrix}-1&1\\-1&0\end{pmatrix}.$$

$$R_{11}(g_2)=\begin{pmatrix}i&0\\-e_{36}-e_{36}^{17}&-i\end{pmatrix}.\quad R_{11}(g_3)=-\epsilon.$$

$$R_{11}(g_4)=\begin{pmatrix}-e_9^2-e_9^3-e_9^6-e_9^7 & e_9^2+e_9^3+e_9^6+e_9^7\\ -e_9^2-e_9^3-e_9^6-e_9^7 & e_9^3-e_9^4-e_9^5+e_9^6\end{pmatrix}.$$

$$R_{11}(g_5)=\begin{pmatrix}-e_9^2-e_9^7 & e_9^3-e_9^4-e_9^5+e_9^6\\ -e_9^3+e_9^4+e_9^5-e_9^6 & e_9^2+e_9^3+e_9^6+e_9^7\end{pmatrix}.$$

$$R_{12}(g_2)=\begin{pmatrix}i&0\\-e_9^4-e_9^5&-i\end{pmatrix}.\quad R_{12}(g_3)=-\epsilon.\quad R_{12}(g_4)=\begin{pmatrix}e_9^4+e_9^5&i\\i&0\end{pmatrix}.$$

$$R_{12}(g_5)=\begin{pmatrix}-e_9^4-e_9^5 & e_{36}+e_{36}^{17}+e_{36}^{21}+e_{36}^{25}+e_{36}^{29}+e_{36}^{33}\\ e_{36}+e_{36}^{17}+e_{36}^{21}+e_{36}^{25}+e_{36}^{29}+e_{36}^{33} & e_9^3+e_9^4+e_9^5+e_9^6\end{pmatrix}.$$

$G_{36}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_3^2. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_3. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -e_9^2 - e_9^5. \quad R_5(g_4) = 1. \quad R_5(g_5) = e_3^2.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = -e_9^4 - e_9^7. \quad R_6(g_4) = 1. \quad R_6(g_5) = e_3.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = e_9^7. \quad R_7(g_4) = 1. \quad R_7(g_5) = e_3.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = e_9^5. \quad R_8(g_4) = 1. \quad R_8(g_5) = e_3^2.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = e_9^4. \quad R_9(g_4) = 1. \quad R_9(g_5) = e_3.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_9^2. \quad R_{10}(g_4) = 1. \quad R_{10}(g_5) = e_3^2.$$
$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = e_3^2. \quad R_{11}(g_4) = 1. \quad R_{11}(g_5) = 1.$$
$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = e_3. \quad R_{12}(g_4) = 1. \quad R_{12}(g_5) = 1.$$
$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = -e_9^2 - e_9^5. \quad R_{13}(g_4) = 1. \quad R_{13}(g_5) = e_3^2.$$
$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = -e_9^4 - e_9^7. \quad R_{14}(g_4) = 1. \quad R_{14}(g_5) = e_3.$$
$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = e_9^7. \quad R_{15}(g_4) = 1. \quad R_{15}(g_5) = e_3.$$
$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_9^5. \quad R_{16}(g_4) = 1. \quad R_{16}(g_5) = e_3^2.$$
$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = e_9^4. \quad R_{17}(g_4) = 1. \quad R_{17}(g_5) = e_3.$$
$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = e_9^2. \quad R_{18}(g_4) = 1. \quad R_{18}(g_5) = e_3^2.$$
$$R_{19}(g_2) = -i. \quad R_{19}(g_3) = 1. \quad R_{19}(g_4) = -1. \quad R_{19}(g_5) = 1.$$
$$R_{20}(g_2) = i. \quad R_{20}(g_3) = 1. \quad R_{20}(g_4) = -1. \quad R_{20}(g_5) = 1.$$
$$R_{21}(g_2) = -i. \quad R_{21}(g_3) = e_3^2. \quad R_{21}(g_4) = -1. \quad R_{21}(g_5) = 1.$$
$$R_{22}(g_2) = -i. \quad R_{22}(g_3) = e_3. \quad R_{22}(g_4) = -1. \quad R_{22}(g_5) = 1.$$
$$R_{23}(g_2) = i. \quad R_{23}(g_3) = e_3^2. \quad R_{23}(g_4) = -1. \quad R_{23}(g_5) = 1.$$
$$R_{24}(g_2) = i. \quad R_{24}(g_3) = e_3. \quad R_{24}(g_4) = -1. \quad R_{24}(g_5) = 1.$$
$$R_{25}(g_2) = -i. \quad R_{25}(g_3) = -e_9^2 - e_9^5. \quad R_{25}(g_4) = -1. \quad R_{25}(g_5) = e_3^2.$$
$$R_{26}(g_2) = -i. \quad R_{26}(g_3) = -e_9^4 - e_9^7. \quad R_{26}(g_4) = -1. \quad R_{26}(g_5) = e_3.$$
$$R_{27}(g_2) = -i. \quad R_{27}(g_3) = e_9^7. \quad R_{27}(g_4) = -1. \quad R_{27}(g_5) = e_3.$$
$$R_{28}(g_2) = -i. \quad R_{28}(g_3) = e_9^5. \quad R_{28}(g_4) = -1. \quad R_{28}(g_5) = e_3^2.$$
$$R_{29}(g_2) = -i. \quad R_{29}(g_3) = e_9^4. \quad R_{29}(g_4) = -1. \quad R_{29}(g_5) = e_3.$$
$$R_{30}(g_2) = -i. \quad R_{30}(g_3) = e_9^2. \quad R_{30}(g_4) = -1. \quad R_{30}(g_5) = e_3^2.$$
$$R_{31}(g_2) = i. \quad R_{31}(g_3) = -e_9^2 - e_9^5. \quad R_{31}(g_4) = -1. \quad R_{31}(g_5) = e_3^2.$$
$$R_{32}(g_2) = i. \quad R_{32}(g_3) = -e_9^4 - e_9^7. \quad R_{32}(g_4) = -1. \quad R_{32}(g_5) = e_3.$$
$$R_{33}(g_2) = i. \quad R_{33}(g_3) = e_9^7. \quad R_{33}(g_4) = -1. \quad R_{33}(g_5) = e_3.$$
$$R_{34}(g_2) = i. \quad R_{34}(g_3) = e_9^5. \quad R_{34}(g_4) = -1. \quad R_{34}(g_5) = e_3^2.$$
$$R_{35}(g_2) = i. \quad R_{35}(g_3) = e_9^4. \quad R_{35}(g_4) = -1. \quad R_{35}(g_5) = e_3.$$
$$R_{36}(g_2) = i. \quad R_{36}(g_3) = e_9^2. \quad R_{36}(g_4) = -1. \quad R_{36}(g_5) = e_3^2.$$

$G_{36}^{(3)}$

$$R_2(g_2)=e_3^2.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=e_3.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-e_9^2-e_9^5.\quad R_4(g_3)=e_3^2.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-e_9^4-e_9^7.\quad R_5(g_3)=e_3.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=e_9^7.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=e_9^5.\quad R_7(g_3)=e_3^2.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=e_9^4.\quad R_8(g_3)=e_3.\quad R_8(g_4)=1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=e_9^2.\quad R_9(g_3)=e_3^2.\quad R_9(g_4)=1.\quad R_9(g_5)=1.$$

$$R_{10}(g_2)=\begin{pmatrix}0&1&0\\0&0&1\\1&0&0\end{pmatrix}.\quad R_{10}(g_3)=\begin{pmatrix}1&0&0\\0&1&0\\0&0&1\end{pmatrix}.$$
$$R_{10}(g_4)=\begin{pmatrix}-1&-1&-1\\0&0&1\\0&1&0\end{pmatrix}.\quad R_{10}(g_5)=\begin{pmatrix}0&0&1\\-1&-1&-1\\1&0&0\end{pmatrix}.$$

$$R_{11}(g_2)=\begin{pmatrix}0&0&-e_9^2-e_9^5\\e_3&0&0\\0&-e_9^4-e_9^7&0\end{pmatrix}.\quad R_{11}(g_3)=\begin{pmatrix}e_3&0&0\\0&e_3&0\\0&0&e_3\end{pmatrix}.$$
$$R_{11}(g_4)=\begin{pmatrix}0&e_9^7&0\\e_9^2&0&0\\-e_9^2&-1&-1\end{pmatrix}.\quad R_{11}(g_5)=\begin{pmatrix}0&0&e_9^7\\-e_9^2&-1&-1\\e_9^2&0&0\end{pmatrix}.$$

$$R_{12}(g_2)=\begin{pmatrix}-e_9^2&e_9^2+e_9^5&-e_9^4\\e_9^5&0&0\\0&0&e_9^2\end{pmatrix}.\quad R_{12}(g_3)=\begin{pmatrix}e_3^2&0&0\\0&e_3^2&0\\0&0&e_3^2\end{pmatrix}.$$
$$R_{12}(g_4)=\begin{pmatrix}-1&-e_3^2&-e_9^2\\0&0&e_9^5\\0&e_9^4&0\end{pmatrix}.\quad R_{12}(g_5)=\begin{pmatrix}0&0&e_9^2\\-e_3&-1&-e_9^5\\e_9^7&0&0\end{pmatrix}.$$

$G_{36}^{(4)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=\phi.\quad R_5(g_3)=\epsilon.\quad R_5(g_4)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix}1&0\\-1&-1\end{pmatrix}.\quad R_6(g_3)=-\epsilon.\quad R_6(g_4)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.\quad R_6(g_5)=\epsilon.$$

$$R_7(g_2)=\begin{pmatrix}(-2e_9^2-e_9^4-e_9^5-2e_9^7)/3&-2(\Re e_9^2+\Re e_{18})/3\\(e_9^2+2e_9^4+2e_9^5+e_9^7)/3&(2e_9^2+e_9^4+e_9^5+2e_9^7)/3\end{pmatrix}.\quad R_7(g_3)=\epsilon.$$
$$R_7(g_4)=\begin{pmatrix}(e_9^2-e_9^4-e_9^5+e_9^7)/3&(-e_9^2-2e_9^4-2e_9^5-e_9^7)/3\\(e_9^2+2e_9^4+2e_9^5+e_9^7)/3&(2e_9^2+3e_9^4+3e_9^5+2e_9^7)/3\end{pmatrix}.\quad R_7(g_5)=\begin{pmatrix}0&1\\-1&-1\end{pmatrix}.$$

$$R_8(g_2) = \begin{pmatrix} -1 & e_9^2+e_9^7 \\ 0 & 1 \end{pmatrix}. \quad R_8(g_3) = \epsilon.$$
$$R_8(g_4) = \begin{pmatrix} -1 & e_9^2+e_9^7 \\ -e_9^2-e_9^7 & -e_9^3+e_9^4+e_9^5-e_9^6 \end{pmatrix}. \quad R_8(g_5) = \begin{pmatrix} -e_9^2-e_9^7 & -e_9^3+e_9^4+e_9^5-e_9^6 \\ e_9^3-e_9^4-e_9^5+e_9^6 & e_9^2+e_9^3+e_9^6+e_9^7 \end{pmatrix}.$$

$$R_9(g_2) = \begin{pmatrix} \Re e_{18}^7 & 1-2\Re e_9+2\Re e_{18}^2 \\ -1 & -\Re e_{18}^7 \end{pmatrix}. \quad R_9(g_3) = \epsilon.$$
$$R_9(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -\Re e_{18}^7 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} 1/(2c_{18}) & -1+2\Re e_9-2\Re e_{18}^2 \\ 1-2\Re e_9+2\Re e_{18}^2 & \Re e_{18}^7 \end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3 & -2(\Re e_9^2+\Re e_{18})/3 \\ (-2e_9^2-e_9^4-e_9^5-2e_9^7)/3 & (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 \end{pmatrix}. \quad R_{10}(g_3) = -\epsilon.$$
$$R_{10}(g_4) = \begin{pmatrix} (e_9^2-e_9^4-e_9^5+e_9^7)/3 & (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 \\ (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3 & (2e_9^2+e_9^4+e_9^5+2e_9^7)/3 \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & -1 \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 & (2e_9^2+e_9^4+e_9^5+2e_9^7)/3 \\ (e_9^2-e_9^4-e_9^5+e_9^7)/3 & (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3 \end{pmatrix}. \quad R_{11}(g_3) = -\epsilon.$$
$$R_{11}(g_4) = \begin{pmatrix} -2(\Re e_9^2+\Re e_{18})/3 & (-2e_9^2-e_9^4-e_9^5-2e_9^7)/3 \\ (2e_9^2+e_9^4+e_9^5+2e_9^7)/3 & (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_{12}(g_2) = \begin{pmatrix} (e_9^2-e_9^4-e_9^5+e_9^7)/3 & (e_9^2+2e_9^4+2e_9^5+e_9^7)/3 \\ (2e_9^2+e_9^4+e_9^5+2e_9^7)/3 & -2(\Re e_9^2+\Re e_{18})/3 \end{pmatrix}. \quad R_{12}(g_3) = -\epsilon.$$
$$R_{12}(g_4) = \begin{pmatrix} (-e_9^2-2e_9^4-2e_9^5-e_9^7)/3 & -2(\Re e_9^2+\Re e_{18})/3 \\ (e_9^2-e_9^4-e_9^5+e_9^7)/3 & (-2e_9^2-e_9^4-e_9^5-2e_9^7)/3 \end{pmatrix}. \quad R_{12}(g_5) = \begin{pmatrix} -1 & 1 \\ -1 & 0 \end{pmatrix}.$$

$G_{36}^{(5)}$

$$R_2(g_2)=-1. \quad R_2(g_3)=-1. \quad R_2(g_4)=1. \quad R_2(g_5)=1.$$
$$R_3(g_2)=-1. \quad R_3(g_3)=1. \quad R_3(g_4)=1. \quad R_3(g_5)=1.$$
$$R_4(g_2)=1. \quad R_4(g_3)=-1. \quad R_4(g_4)=1. \quad R_4(g_5)=1.$$
$$R_5(g_2)=-1. \quad R_5(g_3)=-1. \quad R_5(g_4)=e_3^2. \quad R_5(g_5)=1.$$
$$R_6(g_2)=-1. \quad R_6(g_3)=-1. \quad R_6(g_4)=e_3. \quad R_6(g_5)=1.$$
$$R_7(g_2)=-1. \quad R_7(g_3)=-1. \quad R_7(g_4)=-e_9^2-e_9^5. \quad R_7(g_5)=e_3^2.$$
$$R_8(g_2)=-1. \quad R_8(g_3)=-1. \quad R_8(g_4)=-e_9^4-e_9^7. \quad R_8(g_5)=e_3.$$
$$R_9(g_2)=-1. \quad R_9(g_3)=-1. \quad R_9(g_4)=e_9^7. \quad R_9(g_5)=e_3.$$
$$R_{10}(g_2)=-1. \quad R_{10}(g_3)=-1. \quad R_{10}(g_4)=e_9^5. \quad R_{10}(g_5)=e_3^2.$$
$$R_{11}(g_2)=-1. \quad R_{11}(g_3)=-1. \quad R_{11}(g_4)=e_9^4. \quad R_{11}(g_5)=e_3.$$
$$R_{12}(g_2)=-1. \quad R_{12}(g_3)=-1. \quad R_{12}(g_4)=e_9^2. \quad R_{12}(g_5)=e_3^2.$$
$$R_{13}(g_2)=-1. \quad R_{13}(g_3)=1. \quad R_{13}(g_4)=e_3^2. \quad R_{13}(g_5)=1.$$
$$R_{14}(g_2)=-1. \quad R_{14}(g_3)=1. \quad R_{14}(g_4)=e_3. \quad R_{14}(g_5)=1.$$
$$R_{15}(g_2)=-1. \quad R_{15}(g_3)=1. \quad R_{15}(g_4)=-e_9^2-e_9^5. \quad R_{15}(g_5)=e_3^2.$$
$$R_{16}(g_2)=-1. \quad R_{16}(g_3)=1. \quad R_{16}(g_4)=-e_9^4-e_9^7. \quad R_{16}(g_5)=e_3.$$
$$R_{17}(g_2)=-1. \quad R_{17}(g_3)=1. \quad R_{17}(g_4)=e_9^7. \quad R_{17}(g_5)=e_3.$$
$$R_{18}(g_2)=-1. \quad R_{18}(g_3)=1. \quad R_{18}(g_4)=e_9^5. \quad R_{18}(g_5)=e_3^2.$$
$$R_{19}(g_2)=-1. \quad R_{19}(g_3)=1. \quad R_{19}(g_4)=e_9^4. \quad R_{19}(g_5)=e_3.$$

$$R_{20}(g_2)=-1.\quad R_{20}(g_3)=1.\quad R_{20}(g_4)=e_9^2.\quad R_{20}(g_5)=e_3^2.$$
$$R_{21}(g_2)=1.\quad R_{21}(g_3)=-1.\quad R_{21}(g_4)=e_3^2.\quad R_{21}(g_5)=1.$$
$$R_{22}(g_2)=1.\quad R_{22}(g_3)=-1.\quad R_{22}(g_4)=e_3.\quad R_{22}(g_5)=1.$$
$$R_{23}(g_2)=1.\quad R_{23}(g_3)=-1.\quad R_{23}(g_4)=-e_9^2-e_9^5.\quad R_{23}(g_5)=e_3^2.$$
$$R_{24}(g_2)=1.\quad R_{24}(g_3)=-1.\quad R_{24}(g_4)=-e_9^4-e_9^7.\quad R_{24}(g_5)=e_3.$$
$$R_{25}(g_2)=1.\quad R_{25}(g_3)=-1.\quad R_{25}(g_4)=e_9^7.\quad R_{25}(g_5)=e_3.$$
$$R_{26}(g_2)=1.\quad R_{26}(g_3)=-1.\quad R_{26}(g_4)=e_9^5.\quad R_{26}(g_5)=e_3^2.$$
$$R_{27}(g_2)=1.\quad R_{27}(g_3)=-1.\quad R_{27}(g_4)=e_9^4.\quad R_{27}(g_5)=e_3.$$
$$R_{28}(g_2)=1.\quad R_{28}(g_3)=-1.\quad R_{28}(g_4)=e_9^2.\quad R_{28}(g_5)=e_3^2.$$
$$R_{29}(g_2)=1.\quad R_{29}(g_3)=1.\quad R_{29}(g_4)=e_3^2.\quad R_{29}(g_5)=1.$$
$$R_{30}(g_2)=1.\quad R_{30}(g_3)=1.\quad R_{30}(g_4)=e_3.\quad R_{30}(g_5)=1.$$
$$R_{31}(g_2)=1.\quad R_{31}(g_3)=1.\quad R_{31}(g_4)=-e_9^2-e_9^5.\quad R_{31}(g_5)=e_3^2.$$
$$R_{32}(g_2)=1.\quad R_{32}(g_3)=1.\quad R_{32}(g_4)=-e_9^4-e_9^7.\quad R_{32}(g_5)=e_3.$$
$$R_{33}(g_2)=1.\quad R_{33}(g_3)=1.\quad R_{33}(g_4)=e_9^7.\quad R_{33}(g_5)=e_3.$$
$$R_{34}(g_2)=1.\quad R_{34}(g_3)=1.\quad R_{34}(g_4)=e_9^5.\quad R_{34}(g_5)=e_3^2.$$
$$R_{35}(g_2)=1.\quad R_{35}(g_3)=1.\quad R_{35}(g_4)=e_9^4.\quad R_{35}(g_5)=e_3.$$
$$R_{36}(g_2)=1.\quad R_{36}(g_3)=1.\quad R_{36}(g_4)=e_9^2.\quad R_{36}(g_5)=e_3^2.$$

$G_{36}^{(6)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=e_3^2.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=e_3.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=1.\quad R_5(g_3)=e_3^2.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=e_3.\quad R_6(g_4)=1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-i.\quad R_9(g_3)=e_3^2.\quad R_9(g_4)=-1.\quad R_9(g_5)=1.$$
$$R_{10}(g_2)=-i.\quad R_{10}(g_3)=e_3.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=i.\quad R_{11}(g_3)=e_3^2.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=i.\quad R_{12}(g_3)=e_3.\quad R_{12}(g_4)=-1.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=\begin{pmatrix} i & 0\\ -1 & -i\end{pmatrix}.\quad R_{13}(g_3)=\epsilon.\quad R_{13}(g_4)=-\epsilon.\quad R_{13}(g_5)=\begin{pmatrix} 0 & i\\ i & -1\end{pmatrix}.$$
$$R_{14}(g_2)=\phi.\quad R_{14}(g_3)=\epsilon.\quad R_{14}(g_4)=\epsilon.\quad R_{14}(g_5)=\begin{pmatrix} -1 & -1\\ 1 & 0\end{pmatrix}.$$
$$R_{15}(g_2)=\begin{pmatrix} -i & e_3\\ 0 & i\end{pmatrix}.\quad R_{15}(g_3)=\begin{pmatrix} e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_{15}(g_4)=-\epsilon.\quad R_{15}(g_5)=\begin{pmatrix} -1 & -e_{12}^7\\ -e_{12}^{11} & 0\end{pmatrix}.$$
$$R_{16}(g_2)=\begin{pmatrix} 0 & -e_3^2\\ e_3 & 0\end{pmatrix}.\quad R_{16}(g_3)=\begin{pmatrix} e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{16}(g_4)=-\epsilon.\quad R_{16}(g_5)=\begin{pmatrix} 0 & e_{12}^{11}\\ e_{12}^7 & -1\end{pmatrix}.$$
$$R_{17}(g_2)=\begin{pmatrix} -1 & -e_3^2\\ 0 & 1\end{pmatrix}.\quad R_{17}(g_3)=\begin{pmatrix} e_3^2 & 0\\ 0 & e_3^2\end{pmatrix}.\quad R_{17}(g_4)=\epsilon.\quad R_{17}(g_5)=\begin{pmatrix} -1 & -e_3^2\\ e_3 & 0\end{pmatrix}.$$
$$R_{18}(g_2)=\begin{pmatrix} 1 & 0\\ -e_3 & -1\end{pmatrix}.\quad R_{18}(g_3)=\begin{pmatrix} e_3 & 0\\ 0 & e_3\end{pmatrix}.\quad R_{18}(g_4)=\epsilon.\quad R_{18}(g_5)=\begin{pmatrix} -1 & -e_3^2\\ e_3 & 0\end{pmatrix}.$$

$G_{36}^{(7)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = \phi. \quad R_5(g_3) = \epsilon. \quad R_5(g_4) = \epsilon. \quad R_5(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_6(g_2) = \begin{pmatrix} i & 0 \\ 1 & -i \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} 0 & -i \\ -i & -1 \end{pmatrix}.$$
$$R_7(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_7(g_3) = \epsilon. \quad R_7(g_4) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}. \quad R_7(g_5) = \epsilon.$$
$$R_8(g_2) = \begin{pmatrix} -i & -i \\ 0 & i \end{pmatrix}. \quad R_8(g_3) = -\epsilon. \quad R_8(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_8(g_5) = \epsilon.$$
$$R_9(g_2) = -\kappa. \quad R_9(g_3) = -\epsilon. \quad R_9(g_4) = \begin{pmatrix} 0 & i \\ i & -1 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} 0 & i \\ i & -1 \end{pmatrix}.$$
$$R_{10}(g_2) = -\kappa. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = \begin{pmatrix} -1 & -i \\ -i & 0 \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} 0 & i \\ i & -1 \end{pmatrix}.$$
$$R_{11}(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_{11}(g_3) = \epsilon. \quad R_{11}(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$
$$R_{12}(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_{12}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$G_{36}^{(8)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = e_3^2. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = 1. \quad R_4(g_4) = e_3. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = e_3^2. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = e_3. \quad R_6(g_4) = 1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = e_3^2. \quad R_7(g_4) = e_3^2. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = e_3. \quad R_8(g_4) = e_3. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = e_3. \quad R_9(g_5) = 1.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_3. \quad R_{10}(g_4) = e_3^2. \quad R_{10}(g_5) = 1.$$
$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_3^2. \quad R_{11}(g_5) = 1.$$
$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3. \quad R_{12}(g_5) = 1.$$
$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = e_3^2. \quad R_{13}(g_4) = 1. \quad R_{13}(g_5) = 1.$$
$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = e_3. \quad R_{14}(g_4) = 1. \quad R_{14}(g_5) = 1.$$
$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = e_3^2. \quad R_{15}(g_4) = e_3^2. \quad R_{15}(g_5) = 1.$$
$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = e_3. \quad R_{16}(g_4) = e_3. \quad R_{16}(g_5) = 1.$$
$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = e_3^2. \quad R_{17}(g_4) = e_3. \quad R_{17}(g_5) = 1.$$
$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = e_3. \quad R_{18}(g_4) = e_3^2. \quad R_{18}(g_5) = 1.$$
$$R_{19}(g_2) = -i. \quad R_{19}(g_3) = 1. \quad R_{19}(g_4) = 1. \quad R_{19}(g_5) = -1.$$
$$R_{20}(g_2) = i. \quad R_{20}(g_3) = 1. \quad R_{20}(g_4) = 1. \quad R_{20}(g_5) = -1.$$
$$R_{21}(g_2) = -i. \quad R_{21}(g_3) = 1. \quad R_{21}(g_4) = e_3^2. \quad R_{21}(g_5) = -1.$$

$$R_{22}(g_2)=-i.\quad R_{22}(g_3)=1.\quad R_{22}(g_4)=e_3.\quad R_{22}(g_5)=-1.$$
$$R_{23}(g_2)=i.\quad R_{23}(g_3)=1.\quad R_{23}(g_4)=e_3^2.\quad R_{23}(g_5)=-1.$$
$$R_{24}(g_2)=i.\quad R_{24}(g_3)=1.\quad R_{24}(g_4)=e_3.\quad R_{24}(g_5)=-1.$$
$$R_{25}(g_2)=-i.\quad R_{25}(g_3)=e_3^2.\quad R_{25}(g_4)=1.\quad R_{25}(g_5)=-1.$$
$$R_{26}(g_2)=-i.\quad R_{26}(g_3)=e_3.\quad R_{26}(g_4)=1.\quad R_{26}(g_5)=-1.$$
$$R_{27}(g_2)=i.\quad R_{27}(g_3)=e_3^2.\quad R_{27}(g_4)=1.\quad R_{27}(g_5)=-1.$$
$$R_{28}(g_2)=i.\quad R_{28}(g_3)=e_3.\quad R_{28}(g_4)=1.\quad R_{28}(g_5)=-1.$$
$$R_{29}(g_2)=-i.\quad R_{29}(g_3)=e_3^2.\quad R_{29}(g_4)=e_3^2.\quad R_{29}(g_5)=-1.$$
$$R_{30}(g_2)=-i.\quad R_{30}(g_3)=e_3.\quad R_{30}(g_4)=e_3.\quad R_{30}(g_5)=-1.$$
$$R_{31}(g_2)=i.\quad R_{31}(g_3)=e_3^2.\quad R_{31}(g_4)=e_3^2.\quad R_{31}(g_5)=-1.$$
$$R_{32}(g_2)=i.\quad R_{32}(g_3)=e_3.\quad R_{32}(g_4)=e_3.\quad R_{32}(g_5)=-1.$$
$$R_{33}(g_2)=-i.\quad R_{33}(g_3)=e_3^2.\quad R_{33}(g_4)=e_3.\quad R_{33}(g_5)=-1.$$
$$R_{34}(g_2)=-i.\quad R_{34}(g_3)=e_3.\quad R_{34}(g_4)=e_3^2.\quad R_{34}(g_5)=-1.$$
$$R_{35}(g_2)=i.\quad R_{35}(g_3)=e_3^2.\quad R_{35}(g_4)=e_3.\quad R_{35}(g_5)=-1.$$
$$R_{36}(g_2)=i.\quad R_{36}(g_3)=e_3.\quad R_{36}(g_4)=e_3^2.\quad R_{36}(g_5)=-1.$$

$G_{36}^{(9)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-i.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=i.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$

$$R_5(g_2)=\begin{pmatrix}-1&1&1&0\\-1&0&0&-1\\0&0&1&0\\1&0&0&0\end{pmatrix}.\quad R_5(g_3)=\begin{pmatrix}0&-1&0&-1\\0&-1&-1&0\\0&0&1&0\\-1&1&1&0\end{pmatrix}.$$
$$R_5(g_4)=\begin{pmatrix}1&0&-1&1\\1&0&0&0\\0&0&0&1\\-1&1&1&0\end{pmatrix}.\quad R_5(g_5)=\begin{pmatrix}0&0&0&1\\0&0&1&0\\0&-1&-1&0\\-1&0&0&-1\end{pmatrix}.$$

$$R_6(g_2)=\begin{pmatrix}0&0&0&1\\-1&-1&1&-1\\0&0&1&0\\0&1&0&0\end{pmatrix}.\quad R_6(g_3)=\begin{pmatrix}0&1&0&0\\1&0&0&0\\0&0&1&0\\-1&-1&1&-1\end{pmatrix}.$$
$$R_6(g_4)=\begin{pmatrix}-1&-1&1&-1\\0&-1&0&-1\\-1&0&0&-1\\0&1&0&0\end{pmatrix}.\quad R_6(g_5)=\begin{pmatrix}0&1&0&0\\0&0&1&0\\1&0&0&0\\1&0&-1&1\end{pmatrix}.$$

$G_{36}^{(10)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$

$$R_5(g_2) = -\phi. \quad R_5(g_3) = -\epsilon. \quad R_5(g_4) = \epsilon. \quad R_5(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & -1 \end{pmatrix}.$$

$$R_6(g_2) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_6(g_3) = \epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_7(g_2) = -\epsilon. \quad R_7(g_3) = \phi. \quad R_7(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_7(g_5) = \epsilon.$$

$$R_8(g_2) = \epsilon. \quad R_8(g_3) = \begin{pmatrix} 1 & 0 \\ -1 & -1 \end{pmatrix}. \quad R_8(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_8(g_5) = \epsilon.$$

$$R_9(g_2) = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ -e_3^2 & 0 & 0 & -1 \end{pmatrix}. \quad R_9(g_3) = \begin{pmatrix} 0 & -e_3 & -e_3 & 0 \\ 0 & 0 & 0 & 1 \\ -e_3^2 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 \end{pmatrix}.$$

$$R_9(g_4) = \begin{pmatrix} e_3^2 & 0 & 0 & 0 \\ 0 & e_3 & 0 & 0 \\ 0 & 0 & e_3 & 0 \\ 0 & 0 & 0 & e_3^2 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} -1 & 0 & 0 & -e_3 \\ 0 & -1 & -1 & 0 \\ 0 & 1 & 0 & 0 \\ e_3^2 & 0 & 0 & 0 \end{pmatrix}.$$

$G_{36}^{(11)}$

$$R_2(g_2) = 1. \quad R_2(g_3) = e_3^2. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$

$$R_3(g_2) = 1. \quad R_3(g_3) = e_3. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$

$$R_4(g_2) = e_3^2. \quad R_4(g_3) = 1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$

$$R_5(g_2) = e_3. \quad R_5(g_3) = 1. \quad R_5(g_4) = 1. \quad R_5(g_5) = 1.$$

$$R_6(g_2) = e_3^2. \quad R_6(g_3) = e_3^2. \quad R_6(g_4) = 1. \quad R_6(g_5) = 1.$$

$$R_7(g_2) = e_3. \quad R_7(g_3) = e_3. \quad R_7(g_4) = 1. \quad R_7(g_5) = 1.$$

$$R_8(g_2) = e_3^2. \quad R_8(g_3) = e_3. \quad R_8(g_4) = 1. \quad R_8(g_5) = 1.$$

$$R_9(g_2) = e_3. \quad R_9(g_3) = e_3^2. \quad R_9(g_4) = 1. \quad R_9(g_5) = 1.$$

$$R_{10}(g_2) = \begin{pmatrix} -1 & -1 & -1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}. \quad R_{10}(g_3) = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}.$$

$$R_{10}(g_4) = \begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ -1 & -1 & -1 \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} 0 & 0 & 1 \\ -1 & -1 & -1 \\ 1 & 0 & 0 \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} -1 & -e_3 & -e_3^2 \\ e_3^2 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} e_3 & 0 & 0 \\ 0 & e_3 & 0 \\ 0 & 0 & e_3 \end{pmatrix}.$$

$$R_{11}(g_4) = \begin{pmatrix} 0 & e_3 & 0 \\ e_3^2 & 0 & 0 \\ -e_3 & -e_3^2 & -1 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -1 & -e_3 & -e_3^2 \\ 0 & 0 & e_3 \\ 0 & e_3^2 & 0 \end{pmatrix}.$$

$$R_{12}(g_2) = \begin{pmatrix} 0 & e_3 & 0 \\ -e_3^2 & -1 & -1 \\ 0 & 0 & 1 \end{pmatrix}. \quad R_{12}(g_3) = \begin{pmatrix} e_3^2 & 0 & 0 \\ 0 & e_3^2 & 0 \\ 0 & 0 & e_3^2 \end{pmatrix}.$$

$$R_{12}(g_4) = \begin{pmatrix} 0 & 0 & e_3 \\ -e_3^2 & -1 & -1 \\ e_3^2 & 0 & 0 \end{pmatrix}. \quad R_{12}(g_5) = \begin{pmatrix} -1 & -e_3 & -e_3 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{pmatrix}.$$

$G_{36}^{(12)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_3^2. \quad R_5(g_5) = 1.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_3. \quad R_6(g_5) = 1.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = 1. \quad R_7(g_4) = e_3^2. \quad R_7(g_5) = 1.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = 1. \quad R_8(g_4) = e_3. \quad R_8(g_5) = 1.$$

$$R_9(g_2) = 1. \quad R_9(g_3) = -1. \quad R_9(g_4) = e_3^2. \quad R_9(g_5) = 1.$$

$$R_{10}(g_2) = 1. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = e_3. \quad R_{10}(g_5) = 1.$$

$$R_{11}(g_2) = 1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_3^2. \quad R_{11}(g_5) = 1.$$

$$R_{12}(g_2) = 1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_3. \quad R_{12}(g_5) = 1.$$

$$R_{13}(g_2) = -\phi. \quad R_{13}(g_3) = -\epsilon. \quad R_{13}(g_4) = \epsilon. \quad R_{13}(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & -1 \end{pmatrix}.$$

$$R_{14}(g_2) = \phi. \quad R_{14}(g_3) = \epsilon. \quad R_{14}(g_4) = \epsilon. \quad R_{14}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$$R_{15}(g_2) = \begin{pmatrix} 1 & 0 \\ e_3^2 & -1 \end{pmatrix}. \quad R_{15}(g_3) = -\epsilon. \quad R_{15}(g_4) = \begin{pmatrix} e_3^2 & 0 \\ 0 & e_3^2 \end{pmatrix}. \quad R_{15}(g_5) = \begin{pmatrix} 0 & -e_3 \\ e_3^2 & -1 \end{pmatrix}.$$

$$R_{16}(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_{16}(g_3) = -\epsilon. \quad R_{16}(g_4) = \begin{pmatrix} e_3 & 0 \\ 0 & e_3 \end{pmatrix}. \quad R_{16}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_{17}(g_2) = \begin{pmatrix} 1 & 0 \\ -e_3 & -1 \end{pmatrix}. \quad R_{17}(g_3) = \epsilon. \quad R_{17}(g_4) = \begin{pmatrix} e_3^2 & 0 \\ 0 & e_3^2 \end{pmatrix}. \quad R_{17}(g_5) = \begin{pmatrix} 0 & e_3^2 \\ -e_3 & -1 \end{pmatrix}.$$

$$R_{18}(g_2) = \begin{pmatrix} 1 & 0 \\ -e_3 & -1 \end{pmatrix}. \quad R_{18}(g_3) = \epsilon. \quad R_{18}(g_4) = \begin{pmatrix} e_3 & 0 \\ 0 & e_3 \end{pmatrix}. \quad R_{18}(g_5) = \begin{pmatrix} -1 & -e_3^2 \\ e_3 & 0 \end{pmatrix}.$$

$G_{36}^{(13)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = \phi. \quad R_5(g_3) = \epsilon. \quad R_5(g_4) = \epsilon. \quad R_5(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$
$$R_6(g_2) = \phi. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_7(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_7(g_3) = \epsilon. \quad R_7(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_7(g_5) = \epsilon.$$
$$R_8(g_2) = -\phi. \quad R_8(g_3) = -\epsilon. \quad R_8(g_4) = \begin{pmatrix} 0 & -1 \\ 1 & -1 \end{pmatrix}. \quad R_8(g_5) = \epsilon.$$
$$R_9(g_2) = \phi. \quad R_9(g_3) = -\epsilon. \quad R_9(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$
$$R_{10}(g_2) = \phi. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_{11}(g_2) = \phi. \quad R_{11}(g_3) = \epsilon. \quad R_{11}(g_4) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}. \quad R_{11}(g_5) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}.$$
$$R_{12}(g_2) = \begin{pmatrix} -1 & -1 \\ 0 & 1 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \begin{pmatrix} -1 & -1 \\ 1 & 0 \end{pmatrix}. \quad R_{12}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & -1 \end{pmatrix}.$$

$G_{36}^{(14)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = 1. \quad R_5(g_5) = e_3^2.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = 1. \quad R_6(g_5) = e_3.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = -1. \quad R_7(g_4) = e_3^2. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = -1. \quad R_8(g_4) = e_3. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = -1. \quad R_9(g_4) = e_3^2. \quad R_9(g_5) = e_3^2.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = -1. \quad R_{10}(g_4) = e_3. \quad R_{10}(g_5) = e_3.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = -1. \quad R_{11}(g_4) = e_3^2. \quad R_{11}(g_5) = e_3.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = -1. \quad R_{12}(g_4) = e_3. \quad R_{12}(g_5) = e_3^2.$$
$$R_{13}(g_2) = -1. \quad R_{13}(g_3) = 1. \quad R_{13}(g_4) = 1. \quad R_{13}(g_5) = e_3^2.$$
$$R_{14}(g_2) = -1. \quad R_{14}(g_3) = 1. \quad R_{14}(g_4) = 1. \quad R_{14}(g_5) = e_3.$$
$$R_{15}(g_2) = -1. \quad R_{15}(g_3) = 1. \quad R_{15}(g_4) = e_3^2. \quad R_{15}(g_5) = 1.$$
$$R_{16}(g_2) = -1. \quad R_{16}(g_3) = 1. \quad R_{16}(g_4) = e_3. \quad R_{16}(g_5) = 1.$$
$$R_{17}(g_2) = -1. \quad R_{17}(g_3) = 1. \quad R_{17}(g_4) = e_3^2. \quad R_{17}(g_5) = e_3^2.$$
$$R_{18}(g_2) = -1. \quad R_{18}(g_3) = 1. \quad R_{18}(g_4) = e_3. \quad R_{18}(g_5) = e_3.$$
$$R_{19}(g_2) = -1. \quad R_{19}(g_3) = 1. \quad R_{19}(g_4) = e_3^2. \quad R_{19}(g_5) = e_3.$$
$$R_{20}(g_2) = -1. \quad R_{20}(g_3) = 1. \quad R_{20}(g_4) = e_3. \quad R_{20}(g_5) = e_3^2.$$
$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = -1. \quad R_{21}(g_4) = 1. \quad R_{21}(g_5) = e_3^2.$$

$$
\begin{array}{cccc}
R_{22}(g_2)=1. & R_{22}(g_3)=-1. & R_{22}(g_4)=1. & R_{22}(g_5)=e_3.\\
R_{23}(g_2)=1. & R_{23}(g_3)=-1. & R_{23}(g_4)=e_3^2. & R_{23}(g_5)=1.\\
R_{24}(g_2)=1. & R_{24}(g_3)=-1. & R_{24}(g_4)=e_3. & R_{24}(g_5)=1.\\
R_{25}(g_2)=1. & R_{25}(g_3)=-1. & R_{25}(g_4)=e_3^2. & R_{25}(g_5)=e_3^2.\\
R_{26}(g_2)=1. & R_{26}(g_3)=-1. & R_{26}(g_4)=e_3. & R_{26}(g_5)=e_3.\\
R_{27}(g_2)=1. & R_{27}(g_3)=-1. & R_{27}(g_4)=e_3^2. & R_{27}(g_5)=e_3.\\
R_{28}(g_2)=1. & R_{28}(g_3)=-1. & R_{28}(g_4)=e_3. & R_{28}(g_5)=e_3^2.\\
R_{29}(g_2)=1. & R_{29}(g_3)=1. & R_{29}(g_4)=1. & R_{29}(g_5)=e_3^2.\\
R_{30}(g_2)=1. & R_{30}(g_3)=1. & R_{30}(g_4)=1. & R_{30}(g_5)=e_3.\\
R_{31}(g_2)=1. & R_{31}(g_3)=1. & R_{31}(g_4)=e_3^2. & R_{31}(g_5)=1.\\
R_{32}(g_2)=1. & R_{32}(g_3)=1. & R_{32}(g_4)=e_3. & R_{32}(g_5)=1.\\
R_{33}(g_2)=1. & R_{33}(g_3)=1. & R_{33}(g_4)=e_3^2. & R_{33}(g_5)=e_3^2.\\
R_{34}(g_2)=1. & R_{34}(g_3)=1. & R_{34}(g_4)=e_3. & R_{34}(g_5)=e_3.\\
R_{35}(g_2)=1. & R_{35}(g_3)=1. & R_{35}(g_4)=e_3^2. & R_{35}(g_5)=e_3.\\
R_{36}(g_2)=1. & R_{36}(g_3)=1. & R_{36}(g_4)=e_3. & R_{36}(g_5)=e_3^2.
\end{array}
$$

2.37. **Order 37.** $G_{37}^{(1)}$

$$R_j(g_2)=e_{37}^{j-1},\quad j=1\ldots,37.$$

2.38. **Order 38.** $G_{38}^{(1)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=1.$$

$$R_3(g_2)=\begin{pmatrix} \alpha_{38,1} & \alpha_{38,1}\\ -e_{19}-e_{19}^4-e_{19}^6-e_{19}^8-e_{19}^{11}-e_{19}^{13}-e_{19}^{15}-e_{19}^{18} & -\alpha_{38,1}\end{pmatrix}.$$

$$R_3(g_3)=\begin{pmatrix} e_{19}^6+e_{19}^{13} & -1\\ 1 & 0\end{pmatrix}.$$

Constants:

$$\alpha_{38,1}\equiv e_{19}+e_{19}^3+e_{19}^4+e_{19}^6+e_{19}^8+e_{19}^{11}+e_{19}^{13}+e_{19}^{15}+e_{19}^{16}+e_{19}^{18}.$$

$$R_4(g_2)=\begin{pmatrix} e_{19}^5+e_{19}^8+e_{19}^{11}+e_{19}^{14} & \alpha_{38,2}\\ \alpha_{38,3} & -e_{19}^5-e_{19}^8-e_{19}^{11}-e_{19}^{14}\end{pmatrix}.$$

$$R_4(g_3)=\begin{pmatrix} e_{19}^2+e_{19}^5+e_{19}^8+e_{19}^{11}+e_{19}^{14}+e_{19}^{17} & -\alpha_{38,3}\\ \alpha_{38,3} & -e_{19}^5-e_{19}^8-e_{19}^{11}-e_{19}^{14}\end{pmatrix}.$$

Constants:

$$\alpha_{38,2}\equiv e_{19}+e_{19}^2+e_{19}^4+e_{19}^5+e_{19}^6+e_{19}^7+e_{19}^8+e_{19}^9+e_{19}^{10}+e_{19}^{11}+e_{19}^{12}+e_{19}^{13}+e_{19}^{14}+e_{19}^{15}+e_{19}^{17}+e_{19}^{18};$$

$$\alpha_{38,3}\equiv -e_{19}-e_{19}^2-e_{19}^4-e_{19}^5-e_{19}^7-e_{19}^8-e_{19}^9-e_{19}^{10}-e_{19}^{11}-e_{19}^{12}-e_{19}^{14}-e_{19}^{15}-e_{19}^{17}-e_{19}^{18}.$$

$$R_5(g_2) = \begin{pmatrix} -e_{19}^2 - e_{19}^6 - e_{19}^{13} - e_{19}^{17} & \alpha_{38,4} \\ \alpha_{38,5} & e_{19}^2 + e_{19}^6 + e_{19}^{13} + e_{19}^{17} \end{pmatrix}.$$

$$R_5(g_3) = \begin{pmatrix} -\alpha_{38,4} & \alpha_{38,6} \\ -\alpha_{38,6} & -e_{19} - e_{19}^2 - e_{19}^3 - e_{19}^5 - e_{19}^6 - e_{19}^9 - e_{19}^{10} - e_{19}^{13} - e_{19}^{14} - e_{19}^{16} - e_{19}^{17} - e_{19}^{18} \end{pmatrix}.$$

Constants:

$\alpha_{38,4} \equiv -e_{19} - e_{19}^2 - e_{19}^3 - e_{19}^5 - e_{19}^6 - e_{19}^7 - e_{19}^9 - e_{19}^{10} - e_{19}^{12} - e_{19}^{13} - e_{19}^{14} - e_{19}^{16} - e_{19}^{17} - e_{19}^{18}$;

$\alpha_{38,5} \equiv e_{19} + e_{19}^2 + e_{19}^3 + e_{19}^5 + e_{19}^6 + e_{19}^7 + e_{19}^8 + e_{19}^9 + e_{19}^{10} + e_{19}^{11} + e_{19}^{12} + e_{19}^{13} + e_{19}^{14} + e_{19}^{16} + e_{19}^{17} + e_{19}^{18}$;

$$\alpha_{38,6} \equiv e_{19}^2 + e_{19}^6 + e_{19}^9 + e_{19}^{10} + e_{19}^{13} + e_{19}^{17}.$$

$$R_6(g_2) = \begin{pmatrix} -1 & e_{19}^7 + e_{19}^{12} \\ 0 & 1 \end{pmatrix}. \quad R_6(g_3) = \begin{pmatrix} -1 & e_{19}^7 + e_{19}^{12} \\ -e_{19}^7 - e_{19}^{12} & \alpha_{38,7} \end{pmatrix}.$$

Constants:

$\alpha_{38,7} \equiv -e_{19} - e_{19}^2 - e_{19}^3 - e_{19}^4 - e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{12} - e_{19}^{13} - e_{19}^{15} - e_{19}^{16} - e_{19}^{17} - e_{19}^{18}$.

$$R_7(g_2) = \begin{pmatrix} -e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} & \alpha_{38,8} \\ \alpha_{38,9} & e_{19}^8 + e_{19}^9 + e_{19}^{10} + e_{19}^{11} \end{pmatrix}.$$

$$R_7(g_3) = \begin{pmatrix} -e_{19}^5 - e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{12} - e_{19}^{13} - e_{19}^{14} & \alpha_{38,10} \\ -\alpha_{38,10} & \alpha_{38,11} \end{pmatrix}.$$

Constants:

$\alpha_{38,8} \equiv -e_{19}^3 - e_{19}^4 - e_{19}^5 - e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{12} - e_{19}^{13} - e_{19}^{14} - e_{19}^{15} - e_{19}^{16}$;

$\alpha_{38,9} \equiv e_{19}^2 + e_{19}^3 + e_{19}^4 + e_{19}^5 + e_{19}^6 + e_{19}^7 + e_{19}^8 + e_{19}^9 + e_{19}^{10} + e_{19}^{11} + e_{19}^{12} + e_{19}^{13} + e_{19}^{14} + e_{19}^{15} + e_{19}^{16} + e_{19}^{17}$;

$$\alpha_{38,10} \equiv -e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{12} - e_{19}^{13};$$

$$\alpha_{38,11} \equiv e_{19}^4 + e_{19}^5 + e_{19}^6 + e_{19}^7 + e_{19}^8 + e_{19}^9 + e_{19}^{10} + e_{19}^{11} + e_{19}^{12} + e_{19}^{13} + e_{19}^{14} + e_{19}^{15}.$$

$$R_8(g_2) = \begin{pmatrix} -e_{19}^3 - e_{19}^{16} & \alpha_{38,12} \\ -1 & e_{19}^3 + e_{19}^{16} \end{pmatrix}.$$

$$R_8(g_3) = \begin{pmatrix} -e_{19}^2 - e_{19}^3 - e_{19}^4 - e_{19}^9 - e_{19}^{10} - e_{19}^{15} - e_{19}^{16} - e_{19}^{17} & \alpha_{38,13} \\ -\alpha_{38,13} & -\alpha_{38,13} \end{pmatrix}.$$

Constants:

$\alpha_{38,12} \equiv -e_{19} - e_{19}^2 - e_{19}^3 - e_{19}^4 - e_{19}^5 - e_{19}^7 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{12} - e_{19}^{14} - e_{19}^{15} - e_{19}^{16} - e_{19}^{17} - e_{19}^{18}$;

$$\alpha_{38,13} \equiv -e_{19}^2 - e_{19}^3 - e_{19}^4 - e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} - e_{19}^{15} - e_{19}^{16} - e_{19}^{17}.$$

$$R_9(g_2) = \begin{pmatrix} \alpha_{38,14} & e_{19}^2 + e_{19}^3 + e_{19}^7 + e_{19}^{12} + e_{19}^{16} + e_{19}^{17} \\ -e_{19}^2 - e_{19}^7 - e_{19}^{12} - e_{19}^{17} & -\alpha_{38,14} \end{pmatrix}.$$

$$R_9(g_3) = \begin{pmatrix} \alpha_{38,15} & \alpha_{38,16} \\ -\alpha_{38,16} & -e_{19}^2 - e_{19}^3 - e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^{11} - e_{19}^{12} - e_{19}^{13} - e_{19}^{16} - e_{19}^{17} \end{pmatrix}.$$

Constants:

$\alpha_{38,14} \equiv e_{19} + e_{19}^2 + e_{19}^3 + e_{19}^4 + e_{19}^6 + e_{19}^7 + e_{19}^8 + e_{19}^{11} + e_{19}^{12} + e_{19}^{13} + e_{19}^{15} + e_{19}^{16} + e_{19}^{17} + e_{19}^{18}$;

$$\alpha_{38,15} \equiv e_{19} + e_{19}^2 + e_{19}^3 + e_{19}^6 + e_{19}^7 + e_{19}^8 + e_{19}^{11} + e_{19}^{12} + e_{19}^{13} + e_{19}^{16} + e_{19}^{17} + e_{19}^{18};$$
$$\alpha_{38,16} \equiv e_{19}^2 + e_{19}^3 + e_{19}^7 + e_{19}^8 + e_{19}^{11} + e_{19}^{12} + e_{19}^{16} + e_{19}^{17}.$$

$$R_{10}(g_2) = \begin{pmatrix} -\alpha_{38,8} & e_{19}^7 + e_{19}^8 + e_{19}^9 + e_{19}^{10} + e_{19}^{11} + e_{19}^{12} \\ -e_{19}^8 - e_{19}^9 - e_{19}^{10} - e_{19}^{11} & \alpha_{38,8} \end{pmatrix}.$$
$$R_{10}(g_3) = \begin{pmatrix} 0 & 1 \\ -1 & e_{19}^9 + e_{19}^{10} \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} -e_{19}^5 - e_{19}^{14} & \alpha_{38,16} \\ -1 & e_{19}^5 + e_{19}^{14} \end{pmatrix}.$$
$$R_{11}(g_3) = \begin{pmatrix} e_{19}^3 + e_{19}^4 + e_{19}^5 + e_{19}^6 + e_{19}^{13} + e_{19}^{14} + e_{19}^{15} + e_{19}^{16} & \alpha_{38,17} \\ -\alpha_{38,17} & -e_{19}^4 - e_{19}^5 - e_{19}^6 - e_{19}^{13} - e_{19}^{14} - e_{19}^{15} \end{pmatrix}.$$

Constants:

$$\alpha_{38,16} \equiv -e_{19} - e_{19}^2 - e_{19}^3 - e_{19}^4 - e_{19}^5 - e_{19}^6 - e_{19}^7 - e_{19}^8 - e_{19}^{11} - e_{19}^{12} - e_{19}^{13} - e_{19}^{14} - e_{19}^{15} - e_{19}^{16} - e_{19}^{17} - e_{19}^{18};$$
$$\alpha_{38,17} \equiv e_{19}^2 + e_{19}^3 + e_{19}^4 + e_{19}^5 + e_{19}^6 + e_{19}^7 + e_{19}^{12} + e_{19}^{13} + e_{19}^{14} + e_{19}^{15} + e_{19}^{16} + e_{19}^{17}.$$

$G_{38}^{(2)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = e_{19}^{18}.$$
$$R_4(g_2) = -1. \quad R_4(g_3) = e_{19}^{17}.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = e_{19}^{16}.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = e_{19}^{15}.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = e_{19}^{14}.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = e_{19}^{13}.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = e_{19}^{12}.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = e_{19}^{11}.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = e_{19}^{10}.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = e_{19}^{9}.$$
$$R_{13}(g_2) = -1. \quad R_{13}(g_3) = e_{19}^{8}.$$
$$R_{14}(g_2) = -1. \quad R_{14}(g_3) = e_{19}^{7}.$$
$$R_{15}(g_2) = -1. \quad R_{15}(g_3) = e_{19}^{6}.$$
$$R_{16}(g_2) = -1. \quad R_{16}(g_3) = e_{19}^{5}.$$
$$R_{17}(g_2) = -1. \quad R_{17}(g_3) = e_{19}^{4}.$$
$$R_{18}(g_2) = -1. \quad R_{18}(g_3) = e_{19}^{3}.$$
$$R_{19}(g_2) = -1. \quad R_{19}(g_3) = e_{19}^{2}.$$
$$R_{20}(g_2) = -1. \quad R_{20}(g_3) = e_{19}.$$
$$R_{21}(g_2) = 1. \quad R_{21}(g_3) = e_{19}^{18}.$$
$$R_{22}(g_2) = 1. \quad R_{22}(g_3) = e_{19}^{17}.$$
$$R_{23}(g_2) = 1. \quad R_{23}(g_3) = e_{19}^{16}.$$
$$R_{24}(g_2) = 1. \quad R_{24}(g_3) = e_{19}^{15}.$$

$$R_{25}(g_2) = 1. \quad R_{25}(g_3) = e_{19}^{14}.$$
$$R_{26}(g_2) = 1. \quad R_{26}(g_3) = e_{19}^{13}.$$
$$R_{27}(g_2) = 1. \quad R_{27}(g_3) = e_{19}^{12}.$$
$$R_{28}(g_2) = 1. \quad R_{28}(g_3) = e_{19}^{11}.$$
$$R_{29}(g_2) = 1. \quad R_{29}(g_3) = e_{19}^{10}.$$
$$R_{30}(g_2) = 1. \quad R_{30}(g_3) = e_{19}^{9}.$$
$$R_{31}(g_2) = 1. \quad R_{31}(g_3) = e_{19}^{8}.$$
$$R_{32}(g_2) = 1. \quad R_{32}(g_3) = e_{19}^{7}.$$
$$R_{33}(g_2) = 1. \quad R_{33}(g_3) = e_{19}^{6}.$$
$$R_{34}(g_2) = 1. \quad R_{34}(g_3) = e_{19}^{5}.$$
$$R_{35}(g_2) = 1. \quad R_{35}(g_3) = e_{19}^{4}.$$
$$R_{36}(g_2) = 1. \quad R_{36}(g_3) = e_{19}^{3}.$$
$$R_{37}(g_2) = 1. \quad R_{37}(g_3) = e_{19}^{2}.$$
$$R_{38}(g_2) = 1. \quad R_{38}(g_3) = e_{19}.$$

2.39. **Order 39.** $G_{39}^{(1)}$

$$R_2(g_2) = e_3^2. \quad R_2(g_3) = 1.$$
$$R_3(g_2) = e_3. \quad R_3(g_3) = 1.$$

$$R_4(g_2) = \begin{pmatrix} -e_{13}^7 - e_{13}^8 - e_{13}^{11} & \alpha_{39,1} & \alpha_{39,2} \\ e_{13}^7 + e_{13}^8 + e_{13}^{11} & 1 & -e_{13}^2 - e_{13}^5 - e_{13}^6 \\ \alpha_{39,2} & -e_{13}^2 - e_{13}^5 - e_{13}^6 & \alpha_{39,1} \end{pmatrix}.$$

$$R_4(g_3) = \begin{pmatrix} \alpha_{39,3} & \alpha_{39,2} & -e_{13}^4 - 2e_{13}^7 - 2e_{13}^8 - e_{13}^{10} - 2e_{13}^{11} - e_{13}^{12} \\ -e_{13}^2 - e_{13}^5 - e_{13}^6 & e_{13} + e_{13}^2 + e_{13}^3 + e_{13}^5 + e_{13}^6 + e_{13}^9 & -\alpha_{39,1} \\ \alpha_{39,2} & -e_{13}^2 - e_{13}^5 - e_{13}^6 & \alpha_{39,1} \end{pmatrix}.$$

Constants:

$$\alpha_{39,1} \equiv e_{13} + e_{13}^2 + e_{13}^3 + e_{13}^4 + e_{13}^5 + e_{13}^6 + 2e_{13}^7 + 2e_{13}^8 + e_{13}^9 + e_{13}^{10} + 2e_{13}^{11} + e_{13}^{12};$$
$$\alpha_{39,2} \equiv e_{13} + 2e_{13}^2 + e_{13}^3 + e_{13}^4 + 2e_{13}^5 + 2e_{13}^6 + e_{13}^7 + e_{13}^8 + e_{13}^9 + e_{13}^{10} + e_{13}^{11} + e_{13}^{12};$$
$$\alpha_{39,3} \equiv -e_{13} - 2e_{13}^2 - e_{13}^3 - e_{13}^4 - 2e_{13}^5 - 2e_{13}^6 - 2e_{13}^7 - 2e_{13}^8 - e_{13}^9 - e_{13}^{10} - 2e_{13}^{11} - e_{13}^{12}.$$

$$R_5(g_2) = \begin{pmatrix} -e_{13}^4 - e_{13}^{10} - e_{13}^{12} & e_{13} + e_{13}^3 + e_{13}^9 & 1 \\ \alpha_{39,4} & \alpha_{39,5} & -e_{13}^4 - e_{13}^{10} - e_{13}^{12} \\ 0 & 0 & 1 \end{pmatrix}.$$

$$R_5(g_3) = \begin{pmatrix} \alpha_{39,4} & \alpha_{39,5} & -e_{13}^4 - e_{13}^{10} - e_{13}^{12} \\ \alpha_{39,7} & \alpha_{39,6} & \alpha_{39,5} \\ -\alpha_{39,4} & -e_{13}^4 - e_{13}^{10} - e_{13}^{12} & e_{13}^2 + e_{13}^4 + e_{13}^5 + e_{13}^6 + e_{13}^{10} + e_{13}^{12} \end{pmatrix}.$$

Constants:

$$\alpha_{39,4} \equiv 2e_{13} + e_{13}^2 + 2e_{13}^3 + e_{13}^4 + e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 + 2e_{13}^9 + e_{13}^{10} + e_{13}^{11} + e_{13}^{12};$$
$$\alpha_{39,5} \equiv e_{13} + e_{13}^2 + e_{13}^3 + 2e_{13}^4 + e_{13}^5 + e_{13}^6 + e_{13}^7 + e_{13}^8 + e_{13}^9 + 2e_{13}^{10} + e_{13}^{11} + 2e_{13}^{12};$$
$$\alpha_{39,6} \equiv -2e_{13} - e_{13}^2 - 2e_{13}^3 - 2e_{13}^4 - e_{13}^5 - e_{13}^6 - e_{13}^7 - e_{13}^8 - 2e_{13}^9 - 2e_{13}^{10} - e_{13}^{11} - 2e_{13}^{12};$$

$$\alpha_{39,7} \equiv -2e_{13} - 2e_{13}^3 - e_{13}^7 - e_{13}^8 - 2e_{13}^9 - e_{13}^{11}.$$

$$R_6(g_2) = \begin{pmatrix} -\alpha_{39,6} & e_{13}^2 + e_{13}^4 + e_{13}^5 + e_{13}^6 + e_{13}^{10} + e_{13}^{12} & e_{13} + e_{13}^3 + e_{13}^9 \\ \alpha_{39,7} & \alpha_{39,6} & \alpha_{39,5} \\ 1 & 0 & 0 \end{pmatrix}.$$

$$R_6(g_3) = \begin{pmatrix} 0 & 0 & 1 \\ 1 & 0 & 0 \\ -e_{13} - e_{13}^3 - e_{13}^9 & 1 & e_{13}^4 + e_{13}^{10} + e_{13}^{12} \end{pmatrix}.$$

$$R_7(g_2) = \begin{pmatrix} -e_{13} - e_{13}^3 - e_{13}^9 & 1 & e_{13}^4 + e_{13}^{10} + e_{13}^{12} \\ 0 & 1 & 0 \\ \alpha_{39,5} & -e_{13} - e_{13}^3 - e_{13}^9 & \alpha_{39,4} \end{pmatrix}.$$

$$R_7(g_3) = \begin{pmatrix} -e_{13}^2 - 2e_{13}^4 - e_{13}^5 - e_{13}^6 - 2e_{13}^{10} - 2e_{13}^{12} & \alpha_{39,4} & \alpha_{39,6} \\ \alpha_{39,5} & -e_{13} - e_{13}^3 - e_{13}^9 & \alpha_{39,4} \\ \alpha_{39,7} & \alpha_{39,6} & \alpha_{39,5} \end{pmatrix}.$$

$G_{39}^{(2)}$

$$\begin{aligned}
R_2(g_2) &= 1. & R_2(g_3) &= e_{13}^{12}. \\
R_3(g_2) &= 1. & R_3(g_3) &= e_{13}^{11}. \\
R_4(g_2) &= 1. & R_4(g_3) &= e_{13}^{10}. \\
R_5(g_2) &= 1. & R_5(g_3) &= e_{13}^{9}. \\
R_6(g_2) &= 1. & R_6(g_3) &= e_{13}^{8}. \\
R_7(g_2) &= 1. & R_7(g_3) &= e_{13}^{7}. \\
R_8(g_2) &= 1. & R_8(g_3) &= e_{13}^{6}. \\
R_9(g_2) &= 1. & R_9(g_3) &= e_{13}^{5}. \\
R_{10}(g_2) &= 1. & R_{10}(g_3) &= e_{13}^{4}. \\
R_{11}(g_2) &= 1. & R_{11}(g_3) &= e_{13}^{3}. \\
R_{12}(g_2) &= 1. & R_{12}(g_3) &= e_{13}^{2}. \\
R_{13}(g_2) &= 1. & R_{13}(g_3) &= e_{13}. \\
R_{14}(g_2) &= e_3^2. & R_{14}(g_3) &= 1. \\
R_{15}(g_2) &= e_3. & R_{15}(g_3) &= 1. \\
R_{16}(g_2) &= e_3^2. & R_{16}(g_3) &= e_{13}^{12}. \\
R_{17}(g_2) &= e_3^2. & R_{17}(g_3) &= e_{13}^{11}. \\
R_{18}(g_2) &= e_3^2. & R_{18}(g_3) &= e_{13}^{10}. \\
R_{19}(g_2) &= e_3^2. & R_{19}(g_3) &= e_{13}^{9}. \\
R_{20}(g_2) &= e_3^2. & R_{20}(g_3) &= e_{13}^{8}. \\
R_{21}(g_2) &= e_3^2. & R_{21}(g_3) &= e_{13}^{7}. \\
R_{22}(g_2) &= e_3^2. & R_{22}(g_3) &= e_{13}^{6}. \\
R_{23}(g_2) &= e_3^2. & R_{23}(g_3) &= e_{13}^{5}. \\
R_{24}(g_2) &= e_3^2. & R_{24}(g_3) &= e_{13}^{4}. \\
R_{25}(g_2) &= e_3^2. & R_{25}(g_3) &= e_{13}^{3}.
\end{aligned}$$

$$R_{26}(g_2) = e_3^2. \quad R_{26}(g_3) = e_{13}^2.$$
$$R_{27}(g_2) = e_3^2. \quad R_{27}(g_3) = e_{13}.$$
$$R_{28}(g_2) = e_3. \quad R_{28}(g_3) = e_{13}^{12}.$$
$$R_{29}(g_2) = e_3. \quad R_{29}(g_3) = e_{13}^{11}.$$
$$R_{30}(g_2) = e_3. \quad R_{30}(g_3) = e_{13}^{10}.$$
$$R_{31}(g_2) = e_3. \quad R_{31}(g_3) = e_{13}^{9}.$$
$$R_{32}(g_2) = e_3. \quad R_{32}(g_3) = e_{13}^{8}.$$
$$R_{33}(g_2) = e_3. \quad R_{33}(g_3) = e_{13}^{7}.$$
$$R_{34}(g_2) = e_3. \quad R_{34}(g_3) = e_{13}^{6}.$$
$$R_{35}(g_2) = e_3. \quad R_{35}(g_3) = e_{13}^{5}.$$
$$R_{36}(g_2) = e_3. \quad R_{36}(g_3) = e_{13}^{4}.$$
$$R_{37}(g_2) = e_3. \quad R_{37}(g_3) = e_{13}^{3}.$$
$$R_{38}(g_2) = e_3. \quad R_{38}(g_3) = e_{13}^{2}.$$
$$R_{39}(g_2) = e_3. \quad R_{39}(g_3) = e_{13}.$$

2.40. **Order 40.** $G_{40}^{(1)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -e_8. \quad R_5(g_3) = i. \quad R_5(g_4) = -1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = -e_8^3. \quad R_6(g_3) = -i. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = e_8^3. \quad R_7(g_3) = -i. \quad R_7(g_4) = -1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = e_8. \quad R_8(g_3) = i. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = \begin{pmatrix} i & 0 \\ 2\Re e_5 & -i \end{pmatrix}. \quad R_9(g_3) = -\epsilon. \quad R_9(g_4) = \epsilon. \quad R_9(g_5) = \begin{pmatrix} -1 & e_{20} + e_{20}^9 \\ e_{20} + e_{20}^9 & -2\Re e_5 \end{pmatrix}.$$
$$R_{10}(g_2) = -\kappa. \quad R_{10}(g_3) = -\epsilon. \quad R_{10}(g_4) = \epsilon. \quad R_{10}(g_5) = \begin{pmatrix} 0 & i \\ i & 2\Re e_5 \end{pmatrix}.$$
$$R_{11}(g_2) = \begin{pmatrix} \varphi & -1 \\ -\varphi & -\varphi \end{pmatrix}. \quad R_{11}(g_3) = \epsilon. \quad R_{11}(g_4) = \epsilon. \quad R_{11}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & \varphi \end{pmatrix}.$$
$$R_{12}(g_2) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ -1 & 2\Re e_5 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \epsilon. \quad R_{12}(g_5) = \begin{pmatrix} 0 & 1 \\ -1 & 2\Re e_5 \end{pmatrix}.$$
$$R_{13}(g_2) = \begin{pmatrix} -e_{40}^{31} - e_{40}^{39} & e_{40}^{31} + e_{40}^{39} \\ e_8^3 & e_{40}^{31} + e_{40}^{39} \end{pmatrix}. \quad R_{13}(g_3) = -i\epsilon. \quad R_{13}(g_4) = -\epsilon. \quad R_{13}(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & \varphi \end{pmatrix}.$$
$$R_{14}(g_2) = \begin{pmatrix} 0 & -i \\ 1 & 0 \end{pmatrix}. \quad R_{14}(g_3) = -i\epsilon. \quad R_{14}(g_4) = -\epsilon. \quad R_{14}(g_5) = \begin{pmatrix} -\varphi & -e_{40}^{31} - e_{40}^{39} \\ -e_{40}^{21} - e_{40}^{29} & -1 \end{pmatrix}.$$
$$R_{15}(g_2) = \begin{pmatrix} e_8 & 0 \\ e_{40}^7 + e_{40}^{23} & -e_8 \end{pmatrix}. \quad R_{15}(g_3) = i\epsilon. \quad R_{15}(g_4) = -\epsilon.$$
$$R_{15}(g_5) = \begin{pmatrix} -1 & -e_{20} - e_{20}^9 \\ -e_{20} - e_{20}^9 & -2\Re e_5 \end{pmatrix}.$$
$$R_{16}(g_2) = \begin{pmatrix} 0 & -i \\ -1 & 0 \end{pmatrix}. \quad R_{16}(g_3) = i\epsilon. \quad R_{16}(g_4) = -\epsilon. \quad R_{16}(g_5) = \begin{pmatrix} 2\Re e_5 & e_8 \\ e_8^3 & 0 \end{pmatrix}.$$

$G_{40}^{(2)}$

$$
\begin{array}{cccc}
R_2(g_2)=-1. & R_2(g_3)=1. & R_2(g_4)=1. & R_2(g_5)=1.\\
R_3(g_2)=-1. & R_3(g_3)=e_5^4. & R_3(g_4)=1. & R_3(g_5)=1.\\
R_4(g_2)=-1. & R_4(g_3)=e_5^3. & R_4(g_4)=1. & R_4(g_5)=1.\\
R_5(g_2)=-1. & R_5(g_3)=e_5^2. & R_5(g_4)=1. & R_5(g_5)=1.\\
R_6(g_2)=-1. & R_6(g_3)=e_5. & R_6(g_4)=1. & R_6(g_5)=1.\\
R_7(g_2)=1. & R_7(g_3)=e_5^4. & R_7(g_4)=1. & R_7(g_5)=1.\\
R_8(g_2)=1. & R_8(g_3)=e_5^3. & R_8(g_4)=1. & R_8(g_5)=1.\\
R_9(g_2)=1. & R_9(g_3)=e_5^2. & R_9(g_4)=1. & R_9(g_5)=1.\\
R_{10}(g_2)=1. & R_{10}(g_3)=e_5. & R_{10}(g_4)=1. & R_{10}(g_5)=1.\\
R_{11}(g_2)=-i. & R_{11}(g_3)=1. & R_{11}(g_4)=-1. & R_{11}(g_5)=1.\\
R_{12}(g_2)=i. & R_{12}(g_3)=1. & R_{12}(g_4)=-1. & R_{12}(g_5)=1.\\
R_{13}(g_2)=-i. & R_{13}(g_3)=e_5^4. & R_{13}(g_4)=-1. & R_{13}(g_5)=1.\\
R_{14}(g_2)=-i. & R_{14}(g_3)=e_5^3. & R_{14}(g_4)=-1. & R_{14}(g_5)=1.\\
R_{15}(g_2)=-i. & R_{15}(g_3)=e_5^2. & R_{15}(g_4)=-1. & R_{15}(g_5)=1.\\
R_{16}(g_2)=-i. & R_{16}(g_3)=e_5. & R_{16}(g_4)=-1. & R_{16}(g_5)=1.\\
R_{17}(g_2)=i. & R_{17}(g_3)=e_5^4. & R_{17}(g_4)=-1. & R_{17}(g_5)=1.\\
R_{18}(g_2)=i. & R_{18}(g_3)=e_5^3. & R_{18}(g_4)=-1. & R_{18}(g_5)=1.\\
R_{19}(g_2)=i. & R_{19}(g_3)=e_5^2. & R_{19}(g_4)=-1. & R_{19}(g_5)=1.\\
R_{20}(g_2)=i. & R_{20}(g_3)=e_5. & R_{20}(g_4)=-1. & R_{20}(g_5)=1.\\
R_{21}(g_2)=-e_8. & R_{21}(g_3)=1. & R_{21}(g_4)=i. & R_{21}(g_5)=-1.\\
R_{22}(g_2)=-e_8^3. & R_{22}(g_3)=1. & R_{22}(g_4)=-i. & R_{22}(g_5)=-1.\\
R_{23}(g_2)=e_8^3. & R_{23}(g_3)=1. & R_{23}(g_4)=-i. & R_{23}(g_5)=-1.\\
R_{24}(g_2)=e_8. & R_{24}(g_3)=1. & R_{24}(g_4)=i. & R_{24}(g_5)=-1.\\
R_{25}(g_2)=-e_8. & R_{25}(g_3)=e_5^4. & R_{25}(g_4)=i. & R_{25}(g_5)=-1.\\
R_{26}(g_2)=-e_8. & R_{26}(g_3)=e_5^3. & R_{26}(g_4)=i. & R_{26}(g_5)=-1.\\
R_{27}(g_2)=-e_8. & R_{27}(g_3)=e_5^2. & R_{27}(g_4)=i. & R_{27}(g_5)=-1.\\
R_{28}(g_2)=-e_8. & R_{28}(g_3)=e_5. & R_{28}(g_4)=i. & R_{28}(g_5)=-1.\\
R_{29}(g_2)=-e_8^3. & R_{29}(g_3)=e_5^4. & R_{29}(g_4)=-i. & R_{29}(g_5)=-1.\\
R_{30}(g_2)=-e_8^3. & R_{30}(g_3)=e_5^3. & R_{30}(g_4)=-i. & R_{30}(g_5)=-1.\\
R_{31}(g_2)=-e_8^3. & R_{31}(g_3)=e_5^2. & R_{31}(g_4)=-i. & R_{31}(g_5)=-1.\\
R_{32}(g_2)=-e_8^3. & R_{32}(g_3)=e_5. & R_{32}(g_4)=-i. & R_{32}(g_5)=-1.\\
R_{33}(g_2)=e_8^3. & R_{33}(g_3)=e_5^4. & R_{33}(g_4)=-i. & R_{33}(g_5)=-1.\\
R_{34}(g_2)=e_8^3. & R_{34}(g_3)=e_5^3. & R_{34}(g_4)=-i. & R_{34}(g_5)=-1.\\
R_{35}(g_2)=e_8^3. & R_{35}(g_3)=e_5^2. & R_{35}(g_4)=-i. & R_{35}(g_5)=-1.\\
R_{36}(g_2)=e_8^3. & R_{36}(g_3)=e_5. & R_{36}(g_4)=-i. & R_{36}(g_5)=-1.\\
R_{37}(g_2)=e_8. & R_{37}(g_3)=e_5^4. & R_{37}(g_4)=i. & R_{37}(g_5)=-1.\\
R_{38}(g_2)=e_8. & R_{38}(g_3)=e_5^3. & R_{38}(g_4)=i. & R_{38}(g_5)=-1.\\
R_{39}(g_2)=e_8. & R_{39}(g_3)=e_5^2. & R_{39}(g_4)=i. & R_{39}(g_5)=-1.\\
R_{40}(g_2)=e_8. & R_{40}(g_3)=e_5. & R_{40}(g_4)=i. & R_{40}(g_5)=-1.
\end{array}
$$

$G_{40}^{(3)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = 1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -i. \quad R_3(g_3) = -1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = i. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -e_8. \quad R_5(g_3) = i. \quad R_5(g_4) = -1. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = -e_8^3. \quad R_6(g_3) = -i. \quad R_6(g_4) = -1. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = e_8^3. \quad R_7(g_3) = -i. \quad R_7(g_4) = -1. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = e_8. \quad R_8(g_3) = i. \quad R_8(g_4) = -1. \quad R_8(g_5) = 1.$$

$$R_9(g_2) = \begin{pmatrix} -e_8 & -e_8^3 & e_8^3 & -1 \\ 0 & e_8 & 0 & 0 \\ 0 & 0 & 0 & i \\ i & 0 & 0 & 0 \end{pmatrix}. \quad R_9(g_3) = \begin{pmatrix} 0 & 0 & 1 & 0 \\ 0 & i & 0 & 0 \\ -1 & 0 & 0 & 0 \\ -e_8^3 & e_8 & -e_8 & -i \end{pmatrix}.$$
$$R_9(g_4) = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{pmatrix}. \quad R_9(g_5) = \begin{pmatrix} 0 & 0 & 0 & -e_8^3 \\ i & -1 & 1 & e_8 \\ i & 0 & 0 & 0 \\ 0 & e_8^3 & 0 & 0 \end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} -1 & -1 & -1 & -1 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \end{pmatrix}. \quad R_{10}(g_3) = \begin{pmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ -1 & -1 & -1 & -1 \end{pmatrix}.$$
$$R_{10}(g_4) = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}. \quad R_{10}(g_5) = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ -1 & -1 & -1 & -1 \\ 0 & 0 & 1 & 0 \end{pmatrix}.$$

$G_{40}^{(4)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -i\lambda. \quad R_5(g_3) = -i\phi. \quad R_5(g_4) = -\epsilon. \quad R_5(g_5) = \epsilon.$$
$$R_6(g_2) = \begin{pmatrix} -2\Re e_5 & 2\Re e_5 \\ 1 & 2\Re e_5 \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} -2\Re e_5 & 2\Re e_5 \\ -2\Re e_5 & -1 \end{pmatrix}.$$
$$R_7(g_2) = \begin{pmatrix} 2\Re e_5 & 1 \\ 2\Re e_5 & -2\Re e_5 \end{pmatrix}. \quad R_7(g_3) = -\epsilon. \quad R_7(g_4) = \epsilon. \quad R_7(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & 2\Re e_5 \end{pmatrix}.$$

$$R_8(g_2) = \begin{pmatrix} i & 0 \\ -2\Re e_5 & -i \end{pmatrix}. \quad R_8(g_3) = \begin{pmatrix} -e_{20} + e_{20}^9 + e_{20}^{13} - e_{20}^{17} & 2e_5^2 + 2e_5^3 \\ -2e_5^2 - 2e_5^3 & e_{20} - e_{20}^9 - e_{20}^{13} + e_{20}^{17} \end{pmatrix}.$$
$$R_8(g_4) = -\epsilon. \quad R_8(g_5) = \begin{pmatrix} 1 & e_{20} - e_{20}^9 \\ -e_{20} + e_{20}^9 & e_5 + 2e_5^2 + 2e_5^3 + e_5^4 \end{pmatrix}.$$

$$R_9(g_2)=-i\phi.\quad R_9(g_3)=\begin{pmatrix}(-e_{20}+e_{20}^9-3e_{20}^{13}+3e_{20}^{17})/5 & (4e_{20}-4e_{20}^9+2e_{20}^{13}-2e_{20}^{17})/5\\ (-4e_{20}+4e_{20}^9-2e_{20}^{13}+2e_{20}^{17})/5 & (e_{20}-e_{20}^9+3e_{20}^{13}-3e_{20}^{17})/5\end{pmatrix}.$$
$$R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix}-2\Re e_5 & 2\Re e_5\\ -2\Re e_5 & -1\end{pmatrix}.$$

$$R_{10}(g_2)=\begin{pmatrix}i & 0\\ e_{20}^{13}+e_{20}^{17} & -i\end{pmatrix}.$$
$$R_{10}(g_3)=\begin{pmatrix}(-3e_{20}+3e_{20}^9+e_{20}^{13}-e_{20}^{17})/5 & (-2e_{20}+2e_{20}^9+4e_{20}^{13}-4e_{20}^{17})/5\\ (2e_{20}-2e_{20}^9-4e_{20}^{13}+4e_{20}^{17})/5 & (3e_{20}-3e_{20}^9-e_{20}^{13}+e_{20}^{17})/5\end{pmatrix}.$$
$$R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}-1 & \varphi\\ -\varphi & -\varphi\end{pmatrix}.$$

$$R_{11}(g_2)=\begin{pmatrix}e_{20}+e_{20}^9 & -i\\ -e_{20}-e_{20}^9 & -e_{20}-e_{20}^9\end{pmatrix}.$$
$$R_{11}(g_3)=\begin{pmatrix}(e_{20}-e_{20}^9+3e_{20}^{13}-3e_{20}^{17})/5 & (4e_{20}-4e_{20}^9+2e_{20}^{13}-2e_{20}^{17})/5\\ (-4e_{20}+4e_{20}^9-2e_{20}^{13}+2e_{20}^{17})/5 & (-e_{20}+e_{20}^9-3e_{20}^{13}+3e_{20}^{17})/5\end{pmatrix}.$$
$$R_{11}(g_4)=-\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}2\Re e_5 & -1\\ 1 & 0\end{pmatrix}.$$

$$R_{12}(g_2)=\begin{pmatrix}1 & 0\\ 2\Re e_5 & -1\end{pmatrix}.\quad R_{12}(g_3)=\epsilon.\quad R_{12}(g_4)=\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}-2\Re e_5 & -2\Re e_5\\ 2\Re e_5 & -1\end{pmatrix}.$$

$$R_{13}(g_2)=\begin{pmatrix}-2\Re e_5 & -2\Re e_5\\ -1 & 2\Re e_5\end{pmatrix}.\quad R_{13}(g_3)=\epsilon.\quad R_{13}(g_4)=\epsilon.\quad R_{13}(g_5)=\begin{pmatrix}2\Re e_5 & -1\\ 1 & 0\end{pmatrix}.$$

$G_{40}^{(5)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=-i.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=-1.\quad R_6(g_3)=i.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-i.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=i.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$

$$R_9(g_2)=\begin{pmatrix}1 & 0\\ 2\Re e_5 & -1\end{pmatrix}.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=\epsilon.\quad R_9(g_5)=\begin{pmatrix}-1 & 2\Re e_5\\ -2\Re e_5 & -2\Re e_5\end{pmatrix}.$$

$$R_{10}(g_2)=\begin{pmatrix}-1 & \varphi\\ 0 & 1\end{pmatrix}.\quad R_{10}(g_3)=-\epsilon.\quad R_{10}(g_4)=\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}-1 & \varphi\\ -\varphi & -\varphi\end{pmatrix}.$$

$$R_{11}(g_2)=\begin{pmatrix}1 & 0\\ 2\Re e_5 & -1\end{pmatrix}.\quad R_{11}(g_3)=\epsilon.\quad R_{11}(g_4)=\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}-2\Re e_5 & -2\Re e_5\\ 2\Re e_5 & -1\end{pmatrix}.$$

$$R_{12}(g_2)=\begin{pmatrix}2\Re e_5 & -1\\ -2\Re e_5 & -2\Re e_5\end{pmatrix}.\quad R_{12}(g_3)=\epsilon.\quad R_{12}(g_4)=\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}0 & 1\\ -1 & 2\Re e_5\end{pmatrix}.$$

$$R_{13}(g_2)=\phi.\quad R_{13}(g_3)=-i\epsilon.\quad R_{13}(g_4)=-\epsilon.\quad R_{13}(g_5)=\begin{pmatrix}-2\Re e_5 & -2\Re e_5\\ 2\Re e_5 & -1\end{pmatrix}.$$

$$R_{14}(g_2) = \begin{pmatrix} 1 & 0 \\ -e_{20}^{13} - e_{20}^{17} & -1 \end{pmatrix}. \quad R_{14}(g_3) = -i\epsilon. \quad R_{14}(g_4) = -\epsilon.$$

$$R_{14}(g_5) = \begin{pmatrix} -1 & e_{20}^{13} + e_{20}^{17} \\ e_{20}^{13} + e_{20}^{17} & -\varphi \end{pmatrix}.$$

$$R_{15}(g_2) = \begin{pmatrix} -\varphi & e_{20}^{13} + e_{20}^{17} \\ -i & \varphi \end{pmatrix}. \quad R_{15}(g_3) = i\epsilon. \quad R_{15}(g_4) = -\epsilon. \quad R_{15}(g_5) = \begin{pmatrix} 0 & -i \\ -i & \varphi \end{pmatrix}.$$

$$R_{16}(g_2) = \begin{pmatrix} 2\Re e_5 & -i \\ e_{20} + e_{20}^{9} & -2\Re e_5 \end{pmatrix}. \quad R_{16}(g_3) = i\epsilon. \quad R_{16}(g_4) = -\epsilon. \quad R_{16}(g_5) = \begin{pmatrix} 0 & i \\ i & 2\Re e_5 \end{pmatrix}.$$

$G_{40}^{(6)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = \lambda. \quad R_5(g_3) = -\kappa. \quad R_5(g_4) = -\epsilon. \quad R_5(g_5) = \epsilon.$$

$$R_6(g_2) = \begin{pmatrix} -1 & -\varphi \\ 0 & 1 \end{pmatrix}. \quad R_6(g_3) = -\epsilon. \quad R_6(g_4) = \epsilon. \quad R_6(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & \varphi \end{pmatrix}.$$

$$R_7(g_2) = \begin{pmatrix} \varphi & -1 \\ -\varphi & -\varphi \end{pmatrix}. \quad R_7(g_3) = -\epsilon. \quad R_7(g_4) = \epsilon. \quad R_7(g_5) = \begin{pmatrix} -1 & \varphi \\ -\varphi & -\varphi \end{pmatrix}.$$

$$R_8(g_2) = \begin{pmatrix} (-e_5^2 - e_5^3)/2 & (e_{20}^{13} - e_{20}^{17})/2 \\ (e_{20}^{13} - e_{20}^{17})/2 & 2\Re e_{10} \end{pmatrix}. \quad R_8(g_3) = \kappa. \quad R_8(g_4) = -\epsilon.$$

$$R_8(g_5) = \begin{pmatrix} 2\Re e_{10} & (e_{20}^{13} - e_{20}^{17})/2 \\ (-e_{20}^{13} + e_{20}^{17})/2 & 2\Re e_{10} \end{pmatrix}.$$

$$R_9(g_2) = \begin{pmatrix} (-e_5^2 - e_5^3)/2 & (e_{20}^{13} - e_{20}^{17})/2 \\ (e_{20}^{13} - e_{20}^{17})/2 & 2\Re e_{10} \end{pmatrix}. \quad R_9(g_3) = \kappa. \quad R_9(g_4) = -\epsilon.$$

$$R_9(g_5) = \begin{pmatrix} 2\Re e_{10} & (-e_{20}^{13} + e_{20}^{17})/2 \\ (e_{20}^{13} - e_{20}^{17})/2 & 2\Re e_{10} \end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} -e_5 - 2e_5^2 - 2e_5^3 - e_5^4 & -e_{20} + e_{20}^{9} \\ e_{20} - e_{20}^{9} - e_{20}^{13} + e_{20}^{17} & e_5 + 2e_5^2 + 2e_5^3 + e_5^4 \end{pmatrix}.$$

$$R_{10}(g_3) = \begin{pmatrix} e_{20} - e_{20}^{9} - e_{20}^{13} + e_{20}^{17} & 2e_5^2 + 2e_5^3 \\ -2e_5^2 - 2e_5^3 & -e_{20} + e_{20}^{9} + e_{20}^{13} - e_{20}^{17} \end{pmatrix}.$$

$$R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = \begin{pmatrix} -2e_5^2 - 2e_5^3 & -e_{20} + e_{20}^{9} + e_{20}^{13} - e_{20}^{17} \\ e_{20} - e_{20}^{9} - e_{20}^{13} + e_{20}^{17} & e_5 + 2e_5^2 + 2e_5^3 + e_5^4 \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} 2\Re e_5 & -2\Re e_5 \\ -1 & -2\Re e_5 \end{pmatrix}.$$

$$R_{11}(g_3) = \begin{pmatrix} (-e_{20} + e_{20}^{9} - 3e_{20}^{13} + 3e_{20}^{17})/5 & (4e_{20} - 4e_{20}^{9} + 2e_{20}^{13} - 2e_{20}^{17})/5 \\ (-4e_{20} + 4e_{20}^{9} - 2e_{20}^{13} + 2e_{20}^{17})/5 & (e_{20} - e_{20}^{9} + 3e_{20}^{13} - 3e_{20}^{17})/5 \end{pmatrix}.$$

$$R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = \begin{pmatrix} 0 & -1 \\ 1 & 2\Re e_5 \end{pmatrix}.$$

$$R_{12}(g_2) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ -1 & 2\Re e_5 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \epsilon. \quad R_{12}(g_5) = \begin{pmatrix} -2\Re e_5 & -2\Re e_5 \\ 2\Re e_5 & -1 \end{pmatrix}.$$

$$R_{13}(g_2)=\begin{pmatrix}1&0\\ \varphi&-1\end{pmatrix}.\quad R_{13}(g_3)=\epsilon.\quad R_{13}(g_4)=\epsilon.\quad R_{13}(g_5)=\begin{pmatrix}-1&\varphi\\ -\varphi&-\varphi\end{pmatrix}.$$

$G_{40}^{(7)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-i\phi.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix}-1&-2\Re e_5\\ 2\Re e_5&-2\Re e_5\end{pmatrix}.$$
$$R_{10}(g_2)=i\phi.\quad R_{10}(g_3)=-\epsilon.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}2\Re e_5&-1\\ 1&0\end{pmatrix}.$$

$$R_{11}(g_2)=\begin{pmatrix}-2\Re e_5&2\Re e_5\\ 1&2\Re e_5\end{pmatrix}.\quad R_{11}(g_3)=-\epsilon.\quad R_{11}(g_4)=\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}-1&-2\Re e_5\\ 2\Re e_5&-2\Re e_5\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}-\varphi&-\varphi\\ -1&\varphi\end{pmatrix}.\quad R_{12}(g_3)=-\epsilon.\quad R_{12}(g_4)=\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}-1&\varphi\\ -\varphi&-\varphi\end{pmatrix}.$$
$$R_{13}(g_2)=\begin{pmatrix}i&0\\ 2\Re e_5&-i\end{pmatrix}.\quad R_{13}(g_3)=\epsilon.\quad R_{13}(g_4)=-\epsilon.\quad R_{13}(g_5)=\begin{pmatrix}-1&e_{20}+e_{20}^9\\ e_{20}+e_{20}^9&-2\Re e_5\end{pmatrix}.$$
$$R_{14}(g_2)=\begin{pmatrix}e_{20}+e_{20}^9&-i\\ -e_{20}-e_{20}^9&-e_{20}-e_{20}^9\end{pmatrix}.\quad R_{14}(g_3)=\epsilon.\quad R_{14}(g_4)=-\epsilon.\quad R_{14}(g_5)=\begin{pmatrix}2\Re e_5&-1\\ 1&0\end{pmatrix}.$$
$$R_{15}(g_2)=\begin{pmatrix}1&0\\ \varphi&-1\end{pmatrix}.\quad R_{15}(g_3)=\epsilon.\quad R_{15}(g_4)=\epsilon.\quad R_{15}(g_5)=\begin{pmatrix}0&1\\ -1&\varphi\end{pmatrix}.$$
$$R_{16}(g_2)=\phi.\quad R_{16}(g_3)=\epsilon.\quad R_{16}(g_4)=\epsilon.\quad R_{16}(g_5)=\begin{pmatrix}0&1\\ -1&2\Re e_5\end{pmatrix}.$$

$G_{40}^{(8)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-\lambda.\quad R_5(g_3)=-\phi.\quad R_5(g_4)=-\epsilon.\quad R_5(g_5)=\epsilon.$$
$$R_6(g_2)=\begin{pmatrix}1&0\\ 2\Re e_5&-1\end{pmatrix}.\quad R_6(g_3)=-\epsilon.\quad R_6(g_4)=\epsilon.\quad R_6(g_5)=\begin{pmatrix}-1&2\Re e_5\\ -2\Re e_5&-2\Re e_5\end{pmatrix}.$$
$$R_7(g_2)=\begin{pmatrix}-\varphi&-\varphi\\ -1&\varphi\end{pmatrix}.\quad R_7(g_3)=-\epsilon.\quad R_7(g_4)=\epsilon.\quad R_7(g_5)=\begin{pmatrix}-\varphi&-\varphi\\ \varphi&-1\end{pmatrix}.$$

$$R_8(g_2)=\begin{pmatrix}\varphi&\varphi\\ 1&-\varphi\end{pmatrix}.$$
$$R_8(g_3)=\begin{pmatrix}(3e_5+e_5^2-e_5^3-3e_5^4)/5&(2e_5+4e_5^2-4e_5^3-2e_5^4)/5\\ (-2e_5-4e_5^2+4e_5^3+2e_5^4)/5&(-3e_5-e_5^2+e_5^3+3e_5^4)/5\end{pmatrix}.\quad R_8(g_4)=-\epsilon.\quad R_8(g_5)=\begin{pmatrix}0&1\\ -1&\varphi\end{pmatrix}$$

$$R_9(g_2) = \begin{pmatrix} 2\Re e_{10} & (e_5^2 - e_5^3)/2 \\ -2\Re e_{10} & (-e_5^2 - e_5^3)/2 \end{pmatrix}. \quad R_9(g_3) = -\phi. \quad R_9(g_4) = -\epsilon.$$

$$R_9(g_5) = \begin{pmatrix} 2\Re e_{10} & -2\Re e_{10} \\ -2\Re e_{10} & 2\Re e_{10} \end{pmatrix}.$$

$$R_{10}(g_2) = \begin{pmatrix} -1 & 0 \\ -\varphi & 1 \end{pmatrix}. \quad R_{10}(g_3) = \begin{pmatrix} (-3e_5 - e_5^2 + e_5^3 + 3e_5^4)/5 & (-2e_5 - 4e_5^2 + 4e_5^3 + 2e_5^4)/5 \\ (2e_5 + 4e_5^2 - 4e_5^3 - 2e_5^4)/5 & (3e_5 + e_5^2 - e_5^3 - 3e_5^4)/5 \end{pmatrix}.$$

$$R_{10}(g_4) = -\epsilon. \quad R_{10}(g_5) = \begin{pmatrix} -1 & \varphi \\ -\varphi & -\varphi \end{pmatrix}.$$

$$R_{11}(g_2) = \begin{pmatrix} -1 & 2\Re e_5 \\ 0 & 1 \end{pmatrix}. \quad R_{11}(g_3) = \begin{pmatrix} (e_5 - 3e_5^2 + 3e_5^3 - e_5^4)/5 & (4e_5 - 2e_5^2 + 2e_5^3 - 4e_5^4)/5 \\ (-4e_5 + 2e_5^2 - 2e_5^3 + 4e_5^4)/5 & (-e_5 + 3e_5^2 - 3e_5^3 + e_5^4)/5 \end{pmatrix}.$$

$$R_{11}(g_4) = -\epsilon. \quad R_{11}(g_5) = \begin{pmatrix} 2\Re e_5 & -1 \\ 1 & 0 \end{pmatrix}.$$

$$R_{12}(g_2) = \begin{pmatrix} 2\Re e_5 & -1 \\ -2\Re e_5 & -2\Re e_5 \end{pmatrix}. \quad R_{12}(g_3) = \epsilon. \quad R_{12}(g_4) = \epsilon. \quad R_{12}(g_5) = \begin{pmatrix} -1 & 2\Re e_5 \\ -2\Re e_5 & -2\Re e_5 \end{pmatrix}.$$

$$R_{13}(g_2) = \begin{pmatrix} \varphi & -1 \\ -\varphi & -\varphi \end{pmatrix}. \quad R_{13}(g_3) = \epsilon. \quad R_{13}(g_4) = \epsilon. \quad R_{13}(g_5) = \begin{pmatrix} -1 & \varphi \\ -\varphi & -\varphi \end{pmatrix}.$$

$G_{40}^{(9)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$
$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$
$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$
$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_5^4. \quad R_5(g_5) = 1.$$
$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_5^3. \quad R_6(g_5) = 1.$$
$$R_7(g_2) = -1. \quad R_7(g_3) = -1. \quad R_7(g_4) = e_5^2. \quad R_7(g_5) = 1.$$
$$R_8(g_2) = -1. \quad R_8(g_3) = -1. \quad R_8(g_4) = e_5. \quad R_8(g_5) = 1.$$
$$R_9(g_2) = -1. \quad R_9(g_3) = 1. \quad R_9(g_4) = e_5^4. \quad R_9(g_5) = 1.$$
$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = 1. \quad R_{10}(g_4) = e_5^3. \quad R_{10}(g_5) = 1.$$
$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_5^2. \quad R_{11}(g_5) = 1.$$
$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_5. \quad R_{12}(g_5) = 1.$$
$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = -1. \quad R_{13}(g_4) = e_5^4. \quad R_{13}(g_5) = 1.$$
$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = -1. \quad R_{14}(g_4) = e_5^3. \quad R_{14}(g_5) = 1.$$
$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = -1. \quad R_{15}(g_4) = e_5^2. \quad R_{15}(g_5) = 1.$$
$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = -1. \quad R_{16}(g_4) = e_5. \quad R_{16}(g_5) = 1.$$
$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = 1. \quad R_{17}(g_4) = e_5^4. \quad R_{17}(g_5) = 1.$$
$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = 1. \quad R_{18}(g_4) = e_5^3. \quad R_{18}(g_5) = 1.$$
$$R_{19}(g_2) = 1. \quad R_{19}(g_3) = 1. \quad R_{19}(g_4) = e_5^2. \quad R_{19}(g_5) = 1.$$
$$R_{20}(g_2) = 1. \quad R_{20}(g_3) = 1. \quad R_{20}(g_4) = e_5. \quad R_{20}(g_5) = 1.$$
$$R_{21}(g_2) = -i. \quad R_{21}(g_3) = -1. \quad R_{21}(g_4) = 1. \quad R_{21}(g_5) = -1.$$
$$R_{22}(g_2) = i. \quad R_{22}(g_3) = -1. \quad R_{22}(g_4) = 1. \quad R_{22}(g_5) = -1.$$
$$R_{23}(g_2) = -i. \quad R_{23}(g_3) = -1. \quad R_{23}(g_4) = e_5^4. \quad R_{23}(g_5) = -1.$$
$$R_{24}(g_2) = -i. \quad R_{24}(g_3) = -1. \quad R_{24}(g_4) = e_5^3. \quad R_{24}(g_5) = -1.$$

$$R_{25}(g_2)=-i.\quad R_{25}(g_3)=-1.\quad R_{25}(g_4)=e_5^2.\quad R_{25}(g_5)=-1.$$
$$R_{26}(g_2)=-i.\quad R_{26}(g_3)=-1.\quad R_{26}(g_4)=e_5.\quad R_{26}(g_5)=-1.$$
$$R_{27}(g_2)=i.\quad R_{27}(g_3)=-1.\quad R_{27}(g_4)=e_5^4.\quad R_{27}(g_5)=-1.$$
$$R_{28}(g_2)=i.\quad R_{28}(g_3)=-1.\quad R_{28}(g_4)=e_5^3.\quad R_{28}(g_5)=-1.$$
$$R_{29}(g_2)=i.\quad R_{29}(g_3)=-1.\quad R_{29}(g_4)=e_5^2.\quad R_{29}(g_5)=-1.$$
$$R_{30}(g_2)=i.\quad R_{30}(g_3)=-1.\quad R_{30}(g_4)=e_5.\quad R_{30}(g_5)=-1.$$
$$R_{31}(g_2)=-i.\quad R_{31}(g_3)=1.\quad R_{31}(g_4)=1.\quad R_{31}(g_5)=-1.$$
$$R_{32}(g_2)=i.\quad R_{32}(g_3)=1.\quad R_{32}(g_4)=1.\quad R_{32}(g_5)=-1.$$
$$R_{33}(g_2)=-i.\quad R_{33}(g_3)=1.\quad R_{33}(g_4)=e_5^4.\quad R_{33}(g_5)=-1.$$
$$R_{34}(g_2)=-i.\quad R_{34}(g_3)=1.\quad R_{34}(g_4)=e_5^3.\quad R_{34}(g_5)=-1.$$
$$R_{35}(g_2)=-i.\quad R_{35}(g_3)=1.\quad R_{35}(g_4)=e_5^2.\quad R_{35}(g_5)=-1.$$
$$R_{36}(g_2)=-i.\quad R_{36}(g_3)=1.\quad R_{36}(g_4)=e_5.\quad R_{36}(g_5)=-1.$$
$$R_{37}(g_2)=i.\quad R_{37}(g_3)=1.\quad R_{37}(g_4)=e_5^4.\quad R_{37}(g_5)=-1.$$
$$R_{38}(g_2)=i.\quad R_{38}(g_3)=1.\quad R_{38}(g_4)=e_5^3.\quad R_{38}(g_5)=-1.$$
$$R_{39}(g_2)=i.\quad R_{39}(g_3)=1.\quad R_{39}(g_4)=e_5^2.\quad R_{39}(g_5)=-1.$$
$$R_{40}(g_2)=i.\quad R_{40}(g_3)=1.\quad R_{40}(g_4)=e_5.\quad R_{40}(g_5)=-1.$$

$G_{40}^{(10)}$

$$R_{2}(g_2)=-1.\quad R_{2}(g_3)=-1.\quad R_{2}(g_4)=1.\quad R_{2}(g_5)=1.$$
$$R_{3}(g_2)=-1.\quad R_{3}(g_3)=1.\quad R_{3}(g_4)=1.\quad R_{3}(g_5)=1.$$
$$R_{4}(g_2)=1.\quad R_{4}(g_3)=-1.\quad R_{4}(g_4)=1.\quad R_{4}(g_5)=1.$$
$$R_{5}(g_2)=-1.\quad R_{5}(g_3)=-1.\quad R_{5}(g_4)=e_5^4.\quad R_{5}(g_5)=1.$$
$$R_{6}(g_2)=-1.\quad R_{6}(g_3)=-1.\quad R_{6}(g_4)=e_5^3.\quad R_{6}(g_5)=1.$$
$$R_{7}(g_2)=-1.\quad R_{7}(g_3)=-1.\quad R_{7}(g_4)=e_5^2.\quad R_{7}(g_5)=1.$$
$$R_{8}(g_2)=-1.\quad R_{8}(g_3)=-1.\quad R_{8}(g_4)=e_5.\quad R_{8}(g_5)=1.$$
$$R_{9}(g_2)=-1.\quad R_{9}(g_3)=1.\quad R_{9}(g_4)=e_5^4.\quad R_{9}(g_5)=1.$$
$$R_{10}(g_2)=-1.\quad R_{10}(g_3)=1.\quad R_{10}(g_4)=e_5^3.\quad R_{10}(g_5)=1.$$
$$R_{11}(g_2)=-1.\quad R_{11}(g_3)=1.\quad R_{11}(g_4)=e_5^2.\quad R_{11}(g_5)=1.$$
$$R_{12}(g_2)=-1.\quad R_{12}(g_3)=1.\quad R_{12}(g_4)=e_5.\quad R_{12}(g_5)=1.$$
$$R_{13}(g_2)=1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=e_5^4.\quad R_{13}(g_5)=1.$$
$$R_{14}(g_2)=1.\quad R_{14}(g_3)=-1.\quad R_{14}(g_4)=e_5^3.\quad R_{14}(g_5)=1.$$
$$R_{15}(g_2)=1.\quad R_{15}(g_3)=-1.\quad R_{15}(g_4)=e_5^2.\quad R_{15}(g_5)=1.$$
$$R_{16}(g_2)=1.\quad R_{16}(g_3)=-1.\quad R_{16}(g_4)=e_5.\quad R_{16}(g_5)=1.$$
$$R_{17}(g_2)=1.\quad R_{17}(g_3)=1.\quad R_{17}(g_4)=e_5^4.\quad R_{17}(g_5)=1.$$
$$R_{18}(g_2)=1.\quad R_{18}(g_3)=1.\quad R_{18}(g_4)=e_5^3.\quad R_{18}(g_5)=1.$$
$$R_{19}(g_2)=1.\quad R_{19}(g_3)=1.\quad R_{19}(g_4)=e_5^2.\quad R_{19}(g_5)=1.$$
$$R_{20}(g_2)=1.\quad R_{20}(g_3)=1.\quad R_{20}(g_4)=e_5.\quad R_{20}(g_5)=1.$$
$$R_{21}(g_2)=-\lambda.\quad R_{21}(g_3)=-\phi.\quad R_{21}(g_4)=\epsilon.\quad R_{21}(g_5)=-\epsilon.$$
$$R_{22}(g_2)=\lambda.\quad R_{22}(g_3)=\begin{pmatrix}0 & -e_5^3\\ -e_5^2 & 0\end{pmatrix}.\quad R_{22}(g_4)=\begin{pmatrix}e_5^4 & 0\\ 0 & e_5^4\end{pmatrix}.\quad R_{22}(g_5)=-\epsilon.$$

$$R_{23}(g_2) = -\lambda. \quad R_{23}(g_3) = \begin{pmatrix} 0 & e_5^4 \\ e_5 & 0 \end{pmatrix}. \quad R_{23}(g_4) = \begin{pmatrix} e_5^3 & 0 \\ 0 & e_5^3 \end{pmatrix}. \quad R_{23}(g_5) = -\epsilon.$$

$$R_{24}(g_2) = \lambda. \quad R_{24}(g_3) = \begin{pmatrix} 0 & -e_5^3 \\ -e_5^2 & 0 \end{pmatrix}. \quad R_{24}(g_4) = \begin{pmatrix} e_5^2 & 0 \\ 0 & e_5^2 \end{pmatrix}. \quad R_{24}(g_5) = -\epsilon.$$

$$R_{25}(g_2) = -\lambda. \quad R_{25}(g_3) = -\phi. \quad R_{25}(g_4) = \begin{pmatrix} e_5 & 0 \\ 0 & e_5 \end{pmatrix}. \quad R_{25}(g_5) = -\epsilon.$$

$G_{40}^{(11)}$

$$R_2(g_2) = -1. \quad R_2(g_3) = -1. \quad R_2(g_4) = 1. \quad R_2(g_5) = 1.$$

$$R_3(g_2) = -1. \quad R_3(g_3) = 1. \quad R_3(g_4) = 1. \quad R_3(g_5) = 1.$$

$$R_4(g_2) = 1. \quad R_4(g_3) = -1. \quad R_4(g_4) = 1. \quad R_4(g_5) = 1.$$

$$R_5(g_2) = -1. \quad R_5(g_3) = -1. \quad R_5(g_4) = e_5^4. \quad R_5(g_5) = 1.$$

$$R_6(g_2) = -1. \quad R_6(g_3) = -1. \quad R_6(g_4) = e_5^3. \quad R_6(g_5) = 1.$$

$$R_7(g_2) = -1. \quad R_7(g_3) = -1. \quad R_7(g_4) = e_5^2. \quad R_7(g_5) = 1.$$

$$R_8(g_2) = -1. \quad R_8(g_3) = -1. \quad R_8(g_4) = e_5. \quad R_8(g_5) = 1.$$

$$R_9(g_2) = -1. \quad R_9(g_3) = 1. \quad R_9(g_4) = e_5^4. \quad R_9(g_5) = 1.$$

$$R_{10}(g_2) = -1. \quad R_{10}(g_3) = 1. \quad R_{10}(g_4) = e_5^3. \quad R_{10}(g_5) = 1.$$

$$R_{11}(g_2) = -1. \quad R_{11}(g_3) = 1. \quad R_{11}(g_4) = e_5^2. \quad R_{11}(g_5) = 1.$$

$$R_{12}(g_2) = -1. \quad R_{12}(g_3) = 1. \quad R_{12}(g_4) = e_5. \quad R_{12}(g_5) = 1.$$

$$R_{13}(g_2) = 1. \quad R_{13}(g_3) = -1. \quad R_{13}(g_4) = e_5^4. \quad R_{13}(g_5) = 1.$$

$$R_{14}(g_2) = 1. \quad R_{14}(g_3) = -1. \quad R_{14}(g_4) = e_5^3. \quad R_{14}(g_5) = 1.$$

$$R_{15}(g_2) = 1. \quad R_{15}(g_3) = -1. \quad R_{15}(g_4) = e_5^2. \quad R_{15}(g_5) = 1.$$

$$R_{16}(g_2) = 1. \quad R_{16}(g_3) = -1. \quad R_{16}(g_4) = e_5. \quad R_{16}(g_5) = 1.$$

$$R_{17}(g_2) = 1. \quad R_{17}(g_3) = 1. \quad R_{17}(g_4) = e_5^4. \quad R_{17}(g_5) = 1.$$

$$R_{18}(g_2) = 1. \quad R_{18}(g_3) = 1. \quad R_{18}(g_4) = e_5^3. \quad R_{18}(g_5) = 1.$$

$$R_{19}(g_2) = 1. \quad R_{19}(g_3) = 1. \quad R_{19}(g_4) = e_5^2. \quad R_{19}(g_5) = 1.$$

$$R_{20}(g_2) = 1. \quad R_{20}(g_3) = 1. \quad R_{20}(g_4) = e_5. \quad R_{20}(g_5) = 1.$$

$$R_{21}(g_2) = -i\lambda. \quad R_{21}(g_3) = -i\phi. \quad R_{21}(g_4) = \epsilon. \quad R_{21}(g_5) = -\epsilon.$$

$$R_{22}(g_2) = i\lambda. \quad R_{22}(g_3) = \begin{pmatrix} 0 & -e_5^2 \\ e_5^3 & 0 \end{pmatrix}. \quad R_{22}(g_4) = \begin{pmatrix} e_5^4 & 0 \\ 0 & e_5^4 \end{pmatrix}. \quad R_{22}(g_5) = -\epsilon.$$

$$R_{23}(g_2) = i\lambda. \quad R_{23}(g_3) = \begin{pmatrix} 0 & e_5 \\ -e_5^4 & 0 \end{pmatrix}. \quad R_{23}(g_4) = \begin{pmatrix} e_5^3 & 0 \\ 0 & e_5^3 \end{pmatrix}. \quad R_{23}(g_5) = -\epsilon.$$

$$R_{24}(g_2) = -i\lambda. \quad R_{24}(g_3) = \begin{pmatrix} 0 & e_{20}^{17} \\ e_{20}^{13} & 0 \end{pmatrix}. \quad R_{24}(g_4) = \begin{pmatrix} e_5^2 & 0 \\ 0 & e_5^2 \end{pmatrix}. \quad R_{24}(g_5) = -\epsilon.$$

$$R_{25}(g_2) = -i\lambda. \quad R_{25}(g_3) = \begin{pmatrix} 0 & -e_5 \\ e_5^4 & 0 \end{pmatrix}. \quad R_{25}(g_4) = \begin{pmatrix} e_5 & 0 \\ 0 & e_5 \end{pmatrix}. \quad R_{25}(g_5) = -\epsilon.$$

$G_{40}^{(12)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=1.\quad R_4(g_3)=-1.\quad R_4(g_4)=1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-i.\quad R_5(g_3)=-1.\quad R_5(g_4)=-1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=i.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=-i.\quad R_7(g_3)=1.\quad R_7(g_4)=-1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=i.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$

$$R_9(g_2)=\begin{pmatrix}0&0&1&0\\1&-1&1&-1\\0&-1&0&0\\0&0&0&1\end{pmatrix}.\quad R_9(g_3)=\begin{pmatrix}-1&0&0&0\\0&-1&0&0\\0&0&-1&0\\0&0&0&-1\end{pmatrix}.$$
$$R_9(g_4)=\begin{pmatrix}0&-1&0&0\\-1&0&0&0\\-1&1&-1&1\\0&0&0&1\end{pmatrix}.\quad R_9(g_5)=\begin{pmatrix}0&0&0&-1\\1&-1&1&-1\\1&0&0&0\\0&1&0&0\end{pmatrix}.$$

$$R_{10}(g_2)=\begin{pmatrix}0&0&0&1\\1&0&0&0\\0&1&0&0\\0&0&1&0\end{pmatrix}.\quad R_{10}(g_3)=\begin{pmatrix}1&0&0&0\\0&1&0&0\\0&0&1&0\\0&0&0&1\end{pmatrix}.$$
$$R_{10}(g_4)=\begin{pmatrix}0&0&1&0\\0&0&0&1\\1&0&0&0\\0&1&0&0\end{pmatrix}.\quad R_{10}(g_5)=\begin{pmatrix}-1&-1&-1&-1\\0&0&0&1\\0&1&0&0\\1&0&0&0\end{pmatrix}.$$

$G_{40}^{(13)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$

$$R_9(g_2)=\begin{pmatrix}-2\Re e_5&2\Re e_5\\1&2\Re e_5\end{pmatrix}.\quad R_9(g_3)=-\epsilon.\quad R_9(g_4)=-\epsilon.\quad R_9(g_5)=\begin{pmatrix}-2\Re e_5&2\Re e_5\\-2\Re e_5&-1\end{pmatrix}.$$
$$R_{10}(g_2)=\begin{pmatrix}-1&2\Re e_5\\0&1\end{pmatrix}.\quad R_{10}(g_3)=-\epsilon.\quad R_{10}(g_4)=-\epsilon.\quad R_{10}(g_5)=\begin{pmatrix}0&1\\-1&2\Re e_5\end{pmatrix}.$$
$$R_{11}(g_2)=\begin{pmatrix}-1&\varphi\\0&1\end{pmatrix}.\quad R_{11}(g_3)=-\epsilon.\quad R_{11}(g_4)=\epsilon.\quad R_{11}(g_5)=\begin{pmatrix}0&1\\-1&\varphi\end{pmatrix}.$$
$$R_{12}(g_2)=\begin{pmatrix}\varphi&1\\\varphi&-\varphi\end{pmatrix}.\quad R_{12}(g_3)=-\epsilon.\quad R_{12}(g_4)=\epsilon.\quad R_{12}(g_5)=\begin{pmatrix}-\varphi&\varphi\\-\varphi&-1\end{pmatrix}.$$

$$R_{13}(g_2)=\begin{pmatrix}1&0\\2\Re e_5&-1\end{pmatrix}.\quad R_{13}(g_3)=\epsilon.\quad R_{13}(g_4)=-\epsilon.\quad R_{13}(g_5)=\begin{pmatrix}-2\Re e_5&-2\Re e_5\\2\Re e_5&-1\end{pmatrix}.$$
$$R_{14}(g_2)=\begin{pmatrix}2\Re e_5&-1\\-2\Re e_5&-2\Re e_5\end{pmatrix}.\quad R_{14}(g_3)=\epsilon.\quad R_{14}(g_4)=-\epsilon.\quad R_{14}(g_5)=\begin{pmatrix}0&1\\-1&2\Re e_5\end{pmatrix}.$$
$$R_{15}(g_2)=\begin{pmatrix}\varphi&-1\\-\varphi&-\varphi\end{pmatrix}.\quad R_{15}(g_3)=\epsilon.\quad R_{15}(g_4)=\epsilon.\quad R_{15}(g_5)=\begin{pmatrix}\varphi&-1\\1&0\end{pmatrix}.$$
$$R_{16}(g_2)=\begin{pmatrix}\varphi&-1\\-\varphi&-\varphi\end{pmatrix}.\quad R_{16}(g_3)=\epsilon.\quad R_{16}(g_4)=\epsilon.\quad R_{16}(g_5)=\begin{pmatrix}-\varphi&-\varphi\\\varphi&-1\end{pmatrix}.$$

$G_{40}^{(14)}$

$$R_2(g_2)=-1.\quad R_2(g_3)=-1.\quad R_2(g_4)=-1.\quad R_2(g_5)=1.$$
$$R_3(g_2)=-1.\quad R_3(g_3)=-1.\quad R_3(g_4)=1.\quad R_3(g_5)=1.$$
$$R_4(g_2)=-1.\quad R_4(g_3)=1.\quad R_4(g_4)=-1.\quad R_4(g_5)=1.$$
$$R_5(g_2)=-1.\quad R_5(g_3)=1.\quad R_5(g_4)=1.\quad R_5(g_5)=1.$$
$$R_6(g_2)=1.\quad R_6(g_3)=-1.\quad R_6(g_4)=-1.\quad R_6(g_5)=1.$$
$$R_7(g_2)=1.\quad R_7(g_3)=-1.\quad R_7(g_4)=1.\quad R_7(g_5)=1.$$
$$R_8(g_2)=1.\quad R_8(g_3)=1.\quad R_8(g_4)=-1.\quad R_8(g_5)=1.$$
$$R_9(g_2)=-1.\quad R_9(g_3)=-1.\quad R_9(g_4)=-1.\quad R_9(g_5)=e_5^4.$$
$$R_{10}(g_2)=-1.\quad R_{10}(g_3)=-1.\quad R_{10}(g_4)=-1.\quad R_{10}(g_5)=e_5^3.$$
$$R_{11}(g_2)=-1.\quad R_{11}(g_3)=-1.\quad R_{11}(g_4)=-1.\quad R_{11}(g_5)=e_5^2.$$
$$R_{12}(g_2)=-1.\quad R_{12}(g_3)=-1.\quad R_{12}(g_4)=-1.\quad R_{12}(g_5)=e_5.$$
$$R_{13}(g_2)=-1.\quad R_{13}(g_3)=-1.\quad R_{13}(g_4)=1.\quad R_{13}(g_5)=e_5^4.$$
$$R_{14}(g_2)=-1.\quad R_{14}(g_3)=-1.\quad R_{14}(g_4)=1.\quad R_{14}(g_5)=e_5^3.$$
$$R_{15}(g_2)=-1.\quad R_{15}(g_3)=-1.\quad R_{15}(g_4)=1.\quad R_{15}(g_5)=e_5^2.$$
$$R_{16}(g_2)=-1.\quad R_{16}(g_3)=-1.\quad R_{16}(g_4)=1.\quad R_{16}(g_5)=e_5.$$
$$R_{17}(g_2)=-1.\quad R_{17}(g_3)=1.\quad R_{17}(g_4)=-1.\quad R_{17}(g_5)=e_5^4.$$
$$R_{18}(g_2)=-1.\quad R_{18}(g_3)=1.\quad R_{18}(g_4)=-1.\quad R_{18}(g_5)=e_5^3.$$
$$R_{19}(g_2)=-1.\quad R_{19}(g_3)=1.\quad R_{19}(g_4)=-1.\quad R_{19}(g_5)=e_5^2.$$
$$R_{20}(g_2)=-1.\quad R_{20}(g_3)=1.\quad R_{20}(g_4)=-1.\quad R_{20}(g_5)=e_5.$$
$$R_{21}(g_2)=-1.\quad R_{21}(g_3)=1.\quad R_{21}(g_4)=1.\quad R_{21}(g_5)=e_5^4.$$
$$R_{22}(g_2)=-1.\quad R_{22}(g_3)=1.\quad R_{22}(g_4)=1.\quad R_{22}(g_5)=e_5^3.$$
$$R_{23}(g_2)=-1.\quad R_{23}(g_3)=1.\quad R_{23}(g_4)=1.\quad R_{23}(g_5)=e_5^2.$$
$$R_{24}(g_2)=-1.\quad R_{24}(g_3)=1.\quad R_{24}(g_4)=1.\quad R_{24}(g_5)=e_5.$$
$$R_{25}(g_2)=1.\quad R_{25}(g_3)=-1.\quad R_{25}(g_4)=-1.\quad R_{25}(g_5)=e_5^4.$$
$$R_{26}(g_2)=1.\quad R_{26}(g_3)=-1.\quad R_{26}(g_4)=-1.\quad R_{26}(g_5)=e_5^3.$$
$$R_{27}(g_2)=1.\quad R_{27}(g_3)=-1.\quad R_{27}(g_4)=-1.\quad R_{27}(g_5)=e_5^2.$$
$$R_{28}(g_2)=1.\quad R_{28}(g_3)=-1.\quad R_{28}(g_4)=-1.\quad R_{28}(g_5)=e_5.$$
$$R_{29}(g_2)=1.\quad R_{29}(g_3)=-1.\quad R_{29}(g_4)=1.\quad R_{29}(g_5)=e_5^4.$$
$$R_{30}(g_2)=1.\quad R_{30}(g_3)=-1.\quad R_{30}(g_4)=1.\quad R_{30}(g_5)=e_5^3.$$
$$R_{31}(g_2)=1.\quad R_{31}(g_3)=-1.\quad R_{31}(g_4)=1.\quad R_{31}(g_5)=e_5^2.$$
$$R_{32}(g_2)=1.\quad R_{32}(g_3)=-1.\quad R_{32}(g_4)=1.\quad R_{32}(g_5)=e_5.$$
$$R_{33}(g_2)=1.\quad R_{33}(g_3)=1.\quad R_{33}(g_4)=-1.\quad R_{33}(g_5)=e_5^4.$$

$$\begin{array}{cccc}
R_{34}(g_2)=1. & R_{34}(g_3)=1. & R_{34}(g_4)=-1. & R_{34}(g_5)=e_5^3.\\
R_{35}(g_2)=1. & R_{35}(g_3)=1. & R_{35}(g_4)=-1. & R_{35}(g_5)=e_5^2.\\
R_{36}(g_2)=1. & R_{36}(g_3)=1. & R_{36}(g_4)=-1. & R_{36}(g_5)=e_5.\\
R_{37}(g_2)=1. & R_{37}(g_3)=1. & R_{37}(g_4)=1. & R_{37}(g_5)=e_5^4.\\
R_{38}(g_2)=1. & R_{38}(g_3)=1. & R_{38}(g_4)=1. & R_{38}(g_5)=e_5^3.\\
R_{39}(g_2)=1. & R_{39}(g_3)=1. & R_{39}(g_4)=1. & R_{39}(g_5)=e_5^2.\\
R_{40}(g_2)=1. & R_{40}(g_3)=1. & R_{40}(g_4)=1. & R_{40}(g_5)=e_5.
\end{array}$$

References

1. László Babai and Lajos Rónyai, *Computing irreducible representations of finite groups*, Math. Comp. **55** (1990), 705–722. MR 1035925
2. Christopher John Bradley and Arthur P. Cracknell, *The mathematical theory of the symmetry in solids*, Clarendon Press, Oxford, 1972.
3. John D. Dixon, *Computing irreducible representations of groups*, Math. Comp. **24** (1970), no. 111, 707–712. MR 0280611
4. The GAP Group, *GAP – groups, algorithms, and programming, version 4.7.4*, 2015.
5. Noboru Itô, *On the degrees of irreducible representations of a finite group*, Nagoya Math. J. **3** (1951), no. 1, 5–6. MR 0044528
6. Richard J. Mathar, *Plots of cycle graphs of the finite groups up to order 36*, vixra:1406.0183 (2014).
7. Gerhard J. A. Schneider, *Dixon's character table algorithm revisited*, J. Symbolic Comput **9** (1990), no. 5–6, 601–606.

URL: `http://www.mpia.de/~mathar`

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