

Another method to solve the grasshopper problem(IMO)

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Abstract

The 6th problem of the 50th International Mathematical Olympiad (IMO), held in Germany, 2009, is called 'the grasshopper problem'. To this problem Kos[1] developed theory from unique viewpoints by reference of Noga Alon's combinatorial Nullstellensatz.

We have tried to solve this problem by an original method inspired by a polynomial function that Kos defined in [1], then examined for $n=3, 4$ and 5 . For almost cases the claim of this problem follows, but there remains imperfection due to 'singularity'.

Keywords. inductive, combinatorial Nullstellensatz, Vandermonde polynomial, symmetric group

0.Introduction

The 6th problem of the 50th International Mathematical Olympiad (IMO), held in Germany, 2009, was the following.

Let a_1, a_2, \dots, a_n be distinct positive integers and let M be a set of $n-1$ positive integers not containing $s=a_1+a_2+\dots+a_n$. A grasshopper is to jump along the real axis, starting at the point 0 and making n jumps to the right with lengths a_1, a_2, \dots, a_n in some order. Prove that the order can be chosen in such a way that the grasshopper never lands on any point in M .

According to [1], Kos says that up to now, all known solutions to this problem, so called 'the grasshopper problem', are elementary and inductive, for example, by drawing a real axis on paper. In fact a solution of ours is one of its examples.

Then in [1], Kos tried to apply Noga Alon's combinatorial Nullstellensatz [2], which is effective but not perfect to solve the grasshopper problem, as a result he could not solve the problem with his intentional method.

So we try to present a way to solve the problem and prove it by reference of [1], even if partially.

1. Alon's combinatorial Nullstellensatz

Now we introduce an interesting tool which may help our investigation.

Lemma 1 (Nonvanishing combinatorial Nullstellensatz).

Let S_1, \dots, S_n be nonempty subsets of a field F , and let t_1, \dots, t_n be non-negative integers such that $t_i < |S_i|$ for $i=1, 2, \dots, n$. Let $P(x_1, \dots, x_n)$ be a polynomial over F with total degree $t_1 + \dots + t_n$, and suppose that the coefficient of $x_1^{t_1} x_2^{t_2} \dots x_n^{t_n}$ in $P(x_1, \dots, x_n)$ is nonzero. Then there exist elements $s_1 \in S_1, \dots, s_n \in S_n$ for which $P(s_1, \dots, s_n) \neq 0$.

Also we present a polynomial function $f(x_1, x_2, \dots, x_n)$ by reference of [1] as follows.

$$\begin{aligned} f(x_1, x_2, \dots, x_n) &:= (x_1 - m_1)(x_1 - m_2) \dots (x_1 - m_{n-1})(x_1 + x_2 - m_1) \dots \\ &\quad (x_1 + x_2 - m_2) \dots (x_1 + x_2 - m_{n-1})(x_1 + \dots + x_{n-1} - m_1) \dots \\ &\quad (x_1 + \dots + x_{n-1} - m_2) \dots (x_1 + \dots + x_{n-1} - m_{n-1}) \\ &= \prod_{l=1}^{n-1} \prod_{i=1}^{n-1} ((x_1 + x_2 + \dots + x_l) - m_i) \end{aligned} \quad (1)$$

On the grasshopper problem now if we fix the jumping order as a_1, a_2, \dots, a_n , then a grasshopper succeeds in its jumping without blocked if and only if $f(a_1, \dots, a_n) \neq 0$, then the degree of $f(a_1, \dots, a_n)$ is $(n-1)^2$. And $x_1^{n-1} x_2^{n-1} \dots x_{n-1}^{n-1}$ is a monomial the total degree of which is $(n-1)^2$, and the coefficient of which is 1.

Now we define n sets S_1, S_2, \dots, S_n such that $S_1 = S_2 = \dots = S_n = \{a_1, a_2, \dots, a_n\}$, then the number of elements of these n sets are $|S_1| = |S_2| = \dots = |S_n| = n > n-1$, so we can adopt Lemma 1 to this polynomial function (1).

But there remains imperfection because the elements a_1, a_2, \dots, a_n considered in Lemma 1 are not necessarily distinct, that is to say, a pair of (a_1, \dots, a_n) may be the same number.

If we multiple $f(x_1, \dots, x_n)$ by the so-called Vandermonde polynomial (see, for example, [3, pp. 346–347]), a new polynomial is created as follows.

$$\prod_{1 \leq k < j \leq n-1} (x_k - x_j) \prod_{l=1}^{n-1} \prod_{i=1}^{n-1} ((x_1 + x_2 + \dots + x_l) - m_i) \quad (2)$$

The elements a_1, a_2, \dots, a_n are required to be distinct if the new polynomial is nonzero when $x_i = a_i$ for any i such that $1 \leq i \leq n$. But any monomial of (2) the total degree of which is equal to the degree of (2), $(n-1)^2 + {}_{n-1}C_2$, has a

factor the exponent of which is over $n-1$. Thus Lemma 1 can not be applied.

2. Attempts to use new polynomials by permutations

We could not apply Lemma 1 to $f(x_1, x_2, \dots, x_n)$ if a_1, a_2, \dots, a_n are distinct.

We want to find out an effective polynomial function, on the condition that the total degree is kept, if possible.

Let $\text{Sym}(n)$ be a symmetric group of degree n . By a permutation $\pi \in \text{Sym}(n)$, we get

$$\begin{aligned} & f(x_{\pi(1)}, x_{\pi(2)}, \dots, x_{\pi(n)}) \\ &= \prod_{l=1}^{n-1} \prod_{i=1}^{n-1} ((x_{\pi(1)} + x_{\pi(2)} + \dots + x_{\pi(l)}) - m_i) \end{aligned} \quad (3)$$

There are totally $(n-1)^2$ factors in (3).

And the total number of cases by possible permutations is $n!$.

Then we multiple each (3) by the signature of each permutation, that is $+1$ or -1 , and make their summation as follows.

$$\begin{aligned} & \sum_{\pi \in \text{Sym}(n)} \text{sgn}(\pi) f(x_{\pi(1)}, x_{\pi(2)}, \dots, x_{\pi(n)}) \\ &= \sum_{\pi \in \text{Sym}(n)} \text{sgn}(\pi) \prod_{l=1}^{n-1} \prod_{i=1}^{n-1} ((x_{\pi(1)} + x_{\pi(2)} + \dots + x_{\pi(l)}) - m_i) \end{aligned} \quad (4)$$

In (4) x_i and x_j is anti-symmetric if i is not equal to j , so it may be a multiple of the above-mentioned Vandermonde polynomial.

3. Real example for this case

3-1. the case $n=3$

Unfortunately Alon's combinatorial Nullstellensatz can't be applied now, because by simple computations we can see that nothing but unsuitable 4-degree monomials like $x_1^3 x_2$, $x_1^3 x_3$ exist. In this case $|S_1|$ must be larger than 3, applying Lemma 1 is impossible.

We compute (4) for $n=3$ by summing up $3!=6$ polynomials as follows.

$$\begin{aligned} & \sum_{\pi \in \text{Sym}(3)} \text{sgn}(\pi) f(x_{\pi(1)}, x_{\pi(2)}) \\ &= \sum_{\pi \in \text{Sym}(3)} \text{sgn}(\pi) \prod_{l=1}^2 \prod_{i=1}^2 ((x_{\pi(1)} + x_{\pi(2)}) - m_i) \end{aligned} \quad (5)$$

The computation of (5) is the following.

$$\begin{aligned}
(5) &= f(x_1, x_2, x_3) - f(x_1, x_3, x_2) - f(x_2, x_1, x_3) \\
&\quad + f(x_2, x_3, x_1) + f(x_3, x_1, x_2) - f(x_3, x_2, x_1) \\
&= (x_1 - m_1)(x_1 - m_2)(x_1 + x_2 - m_1)(x_1 + x_2 - m_2) \\
&\quad - (x_1 - m_1)(x_1 - m_2)(x_1 + x_3 - m_1)(x_1 + x_3 - m_2) \\
&\quad - (x_2 - m_1)(x_2 - m_2)(x_2 + x_1 - m_1)(x_2 + x_1 - m_2) \\
&\quad + (x_2 - m_1)(x_2 - m_2)(x_2 + x_3 - m_1)(x_2 + x_3 - m_2) \\
&\quad + (x_3 - m_1)(x_3 - m_2)(x_3 + x_1 - m_1)(x_3 + x_1 - m_2) \\
&\quad - (x_3 - m_1)(x_3 - m_2)(x_3 + x_2 - m_1)(x_3 + x_2 - m_2) \\
&= (x_1 - x_2)(x_1 - x_3)(x_2 - x_3)((x_1 + x_2 + x_3) - (m_1 + m_2)) \quad (6)
\end{aligned}$$

We present other computations. 3 pairs of the above 6 polynomials appear by turns.

$$\begin{aligned}
&f(x_1, x_2, x_3) - f(x_1, x_3, x_2) \\
&= (x_1 - m_1)(x_1 - m_2)(x_1 + x_2 - m_1)(x_1 + x_2 - m_2) \\
&\quad - (x_1 - m_1)(x_1 - m_2)(x_1 + x_3 - m_1)(x_1 + x_3 - m_2) \\
&= (x_1 - m_1)(x_1 - m_2)((2x_1 + x_2 + x_3) - (m_1 + m_2)) \quad (7)
\end{aligned}$$

$$\begin{aligned}
&f(x_2, x_1, x_3) - f(x_2, x_3, x_1) \\
&= (x_2 - m_1)(x_2 - m_2)(x_2 + x_1 - m_1)(x_2 + x_1 - m_2) \\
&\quad - (x_2 - m_1)(x_2 - m_2)(x_2 + x_3 - m_1)(x_2 + x_3 - m_2) \\
&= (x_2 - m_1)(x_2 - m_2)((x_1 + 2x_2 + x_3) - (m_1 + m_2)) \quad (8)
\end{aligned}$$

$$\begin{aligned}
&f(x_3, x_1, x_2) - f(x_3, x_2, x_1) \\
&= (x_3 - m_1)(x_3 - m_2)(x_3 + x_1 - m_1)(x_3 + x_1 - m_2) \\
&\quad - (x_3 - m_1)(x_3 - m_2)(x_3 + x_2 - m_1)(x_3 + x_2 - m_2) \\
&= (x_3 - m_1)(x_3 - m_2)((x_1 + x_2 + 2x_3) - (m_1 + m_2)) \quad (9)
\end{aligned}$$

Theorem 1.

Let a_1, a_2, a_3 be distinct positive integers, and m_1, m_2 be distinct positive integers, then there exists $\pi \in \text{Sym}(3)$ that holds

$$\begin{aligned}
&f(a_{\pi(1)}, a_{\pi(2)}, a_{\pi(3)}) = \\
&\quad (a_{\pi(1)} - m_1)(a_{\pi(1)} - m_2)(a_{\pi(1)} + a_{\pi(2)} - m_1)(a_{\pi(1)} + a_{\pi(2)} - m_2) \\
&\quad \neq 0. \quad (10)
\end{aligned}$$

Proof.

If $f(a_{\pi(1)}, a_{\pi(2)}) = (a_{\pi(1)} - m_1)(a_{\pi(1)} - m_2)(a_{\pi(1)} + a_{\pi(2)} - m_1) \times (a_{\pi(1)} + a_{\pi(2)} - m_2) = 0$ for any $\pi \in \text{Sym}(3)$, then four equations hold as below by (6), (7), (8) and (9).

$$(a_1 - a_2)(a_1 - a_3)(a_2 - a_3)((a_1 + a_2 + a_3) - (m_1 + m_2)) = 0. \quad (11)$$

$$(a_1 - m_1)(a_1 - m_2)((2a_1 + a_2 + a_3) - (m_1 + m_2)) = 0. \quad (12)$$

$$(a_2 - m_1)(a_2 - m_2)((a_1 + 2a_2 + a_3) - (m_1 + m_2)) = 0. \quad (13)$$

$$(a_3 - m_1)(a_3 - m_2)((a_1 + a_2 + 3a_3) - (m_1 + m_2)) = 0. \quad (14)$$

From (11), $(a_1 + a_2 + a_3) - (m_1 + m_2) = 0$ follows, because a_1, a_2, a_3 are distinct. Then neither $2(a_1 + a_2 + a_3) - (m_1 + m_2)$ nor $(a_1 + 2a_2 + a_3) - (m_1 + m_2)$ nor $(a_1 + a_2 + 3a_3) - (m_1 + m_2)$ is equal to 0, so $(a_1 - m_1)(a_1 - m_2) = 0$ and $(a_2 - m_1)(a_2 - m_2) = 0$ and $(a_3 - m_1)(a_3 - m_2) = 0$ at (12), (13) and (14), which does not happen at the same time, this is because a_1, a_2 and a_3 are distinct and m_1 and m_2 are also distinct.

It follows that the assumption above does not come true.

This completes the proof. □

If $f(a_1, a_2, a_3) \neq 0$, then at least one of the above-mentioned six polynomials consisting of (6) is not 0. Therefore the claim of the grasshopper problem follows for $n=3$, that is to say, a grasshopper succeeds in jumping without landing on m_1 or m_2 by choosing one order $(a_{i_1}, a_{i_2}, a_{i_3})$ out of six possible jumping orders, such that $f(a_{i_1}, a_{i_2}, a_{i_3}) = (a_{i_1} - m_1)(a_{i_1} - m_2)(a_{i_1} + a_{i_2} - m_1)(a_{i_1} + a_{i_2} - m_2) \neq 0$.

For the $n=3$'s case of the grasshopper problem, $\{(a_1, a_2, a_3) | (a_1 + a_2 + a_3) - (m_1 + m_2) = 0\}$ is a 'singularity' set that may vanish the possibility of a grasshopper's safe jumping. But by comparing (6) with (7), (8) and (9), this possibility has been easily denied.

3-2. the case $n=4$

We sum up $4! = 24$ polynomials which were made by permutation as follows.

$$\begin{aligned} & \sum_{\pi \in \text{Sym}(4)} \text{sgn}(\pi) f(x_{\pi(1)}, x_{\pi(2)}, x_{\pi(3)}) \\ &= \sum_{\pi \in \text{Sym}(4)} \text{sgn}(\pi) \prod_{l=1}^3 \prod_{i=1}^3 ((x_{\pi(1)} + x_{\pi(2)} + x_{\pi(3)}) - m_i) \end{aligned} \quad (15)$$

The degree is $3^2=9$ and the permutation number is $4!=24$, so the computation of (15) is more complicated. We present the computing results for the case $n=4$, similarly as the case $n=3$, as below.

$$\begin{aligned}
(15) &= (x_1-x_2)(x_1-x_3)(x_1-x_4)(x_2-x_3)(x_2-x_4)(x_3-x_4) \\
&\times (3(x_1+x_2+x_3+x_4)-2(m_1+m_2+m_3)) \\
&\times (6(x_1^2+x_2^2+x_3^2+x_4^2)+8(m_1m_2+m_1m_3+m_1m_4+m_2m_3+m_2m_4+m_3m_4) \\
&\quad -7(m_1+m_2+m_3)(x_1+x_2+x_3+x_4) \\
&\quad + (m_1^2+m_2^2+m_3^2+6m_1m_2+6m_2m_3+6m_3m_1)) \tag{16}
\end{aligned}$$

$$\begin{aligned}
&f(x_1, x_2, x_3, x_4) - f(x_1, x_2, x_4, x_3) \\
&= (x_1-m_1)(x_1-m_2)(x_1-m_3)(x_1+x_2-m_1)(x_1+x_2-m_2)(x_1+x_2-m_3) \\
&\times (x_3-x_4) \\
&\times ((3x_1^2+3x_2^2+x_3^2+x_4^2)+(6x_1x_2+3x_1x_3+3x_1x_4+3x_2x_3+3x_2x_4+x_3x_4) \\
&\quad - (m_1+m_2+m_3)(2x_1+2x_2+x_3+x_4)+m_1m_2+m_1m_3+m_2m_3) \tag{17}
\end{aligned}$$

Now generalizing (17), for $(x_{j_1}, x_{j_2}, x_{j_3}, x_{j_4})$, any permutation of (x_1, x_2, x_3, x_4) , we obtain

$$\begin{aligned}
&f(x_{j_1}, x_{j_2}, x_{j_3}, x_{j_4}) - f(x_{j_1}, x_{j_2}, x_{j_4}, x_{j_3}) \\
&= (x_{j_1}-m_1)(x_{j_1}-m_2)(x_{j_1}-m_3)(x_{j_1}+x_{j_2}-m_1)(x_{j_1}+x_{j_2}-m_2)(x_{j_1}+x_{j_2}-m_3) \\
&\times (x_{j_3}-x_{j_4}) \\
&\times ((3x_{j_1}^2+3x_{j_2}^2+x_{j_3}^2+x_{j_4}^2)+(6x_{j_1}x_{j_2}+3x_{j_1}x_{j_3}+3x_{j_1}x_{j_4}+3x_{j_2}x_{j_3}+3x_{j_2}x_{j_4}+x_{j_3}x_{j_4}) \\
&\quad - (m_1+m_2+m_3)(2x_{j_1}+2x_{j_2}+x_{j_3}+x_{j_4})+m_1m_2+m_1m_3+m_2m_3) \tag{18}
\end{aligned}$$

From (16), for the case $n=4$ of the grasshopper problem, we can obtain that

$$\begin{aligned}
&\{(a_1, a_2, a_3, a_4) | \\
&\quad (3(a_1+a_2+a_3+a_4)-2(m_1+m_2+m_3)) \\
&\quad \times (6(a_1^2+a_2^2+a_3^2+a_4^2) \\
&\quad \quad +8(a_1a_2+a_1a_3+a_1a_4+a_2a_3+a_2a_4+a_3a_4) \\
&\quad \quad -7(m_1+m_2+m_3)(a_1+a_2+a_3+a_4) \\
&\quad \quad + (m_1^2+m_2^2+m_3^2+6m_1m_2+6m_2m_3+6m_3m_1))=0\} \tag{19}
\end{aligned}$$

is a 'singularity' set that may eliminate the possibility of a grasshopper's safe jumping.

Unlike the case $n=3$, the comparison of (18) and (19) does not lead to the solution of the grasshopper problem yet, for $n=4$.

For (17), when $(x_1, x_2, x_3, x_4) = (1, 4, 2, 3)$ and $(m_1, m_2, m_3) = (2, 3, 10)$, then

$$\begin{aligned}
& (3x_1^2 + 3x_2^2 + x_3^2 + x_4^2) + (6x_1x_2 + 3x_1x_3 + 3x_1x_4 + 3x_2x_3 + 3x_2x_4 + x_3x_4) \\
& - (m_1 + m_2 + m_3)(2x_1 + 2x_2 + x_3 + x_4) + m_1m_2 + m_1m_3 + m_2m_3 \\
& = (3 \times 1^2 + 3 \times 4^2 + 2^2 + 3^2) \\
& + (6 \times 1 \times 4 + 3 \times 1 \times 2 + 3 \times 1 \times 3 + 3 \times 4 \times 2 + 3 \times 4 \times 3 + 2 \times 3) \\
& - (2 + 3 + 10)(2 \times 1 + 2 \times 4 + 2 + 3) + (2 \times 3 + 2 \times 10 + 3 \times 10) \\
& = 64 + 105 - 225 + 56 = 0
\end{aligned}$$

It follows that (17) is equal to 0 for this case, which does not require $(x_1 - m_1)(x_1 - m_2)(x_1 - m_3)(x_1 + x_2 - m_1)(x_1 + x_2 - m_2)(x_1 + x_2 - m_3) = 0$, in fact, $(1 - 2)(1 - 3)(1 - 10)(1 + 4 - 2)(1 + 4 - 3)(1 + 4 - 10) \neq 0$.

And the condition that $(x_1, x_2, x_3, x_4) = (1, 4, 2, 3)$ and $(m_1, m_2, m_3) = (2, 3, 10)$ fulfills (16) = 0. In short, when $(m_1, m_2, m_3) = (2, 3, 10)$, $(x_1, x_2, x_3, x_4) = (1, 4, 2, 3)$ is an element of so-called the 'singularity' set.

$(x_1, x_2, x_3, x_4) = (1, 4, 2, 3)$ does not restrict the value of $(x_1 - m_1)(x_1 - m_2)(x_1 - m_3) \times (x_1 + x_2 - m_1)(x_1 + x_2 - m_2)(x_1 + x_2 - m_3)$, therefore we can not approach the proof of the case $n=4$ like Theorem 1.

3-3. the case $n=5$

We sum up $5! = 120$ polynomials which were made by permutation, as follows.

$$\begin{aligned}
& \sum_{\pi \in \text{Sym}(5)} \text{sgn}(\pi) f(x_{\pi(1)}, x_{\pi(2)}, x_{\pi(3)}, x_{\pi(4)}) \\
& = \sum_{\pi \in \text{Sym}(5)} \text{sgn}(\pi) \prod_{l=1}^4 \prod_{i=1}^4 ((x_{\pi(1)} + x_{\pi(2)} + x_{\pi(3)} + x_{\pi(4)}) - m_i) \quad (20)
\end{aligned}$$

The computation of (20) is very complicated, so we only show the result in the appendix, how long it is as below.

Unlike the cases $n=3$ and 4, the computing result does not include a factor that consists both of $(a_1 + a_2 + a_3 + a_4 + a_5)$ and $(m_1 + m_2 + m_3 + m_4)$, for example $3(a_1 + a_2 + a_3 + a_4 + a_5) - 2(m_1 + m_2 + m_3 + m_4)$.

4. One more theorem

At last we present a new theorem.

Theorem 2.

Let a_1, a_2, \dots, a_n be distinct positive integers such that $0 < a_1 < a_2 < \dots < a_n$, and m_1, m_2, \dots, m_{n-1} be distinct positive integers.

Now if any two distinct subsets of $\{a_1, a_2, \dots, a_n\}$,
 $\{r_1, r_2, \dots, r_t\}$ and $\{s_1, s_2, \dots, s_u\}$, hold

$$\sum_{v=1}^t r_v \neq \sum_{w=1}^u s_w, \quad (21)$$

then the claim of the grasshopper problem follows.

Proof.

There are totally $n!$ expressions in the form of (3) for degree n . For any above-mentioned subset if the sum total of each element is equal to one element of $\{m_1, m_2, \dots, m_{n-1}\}$, then any expression that includes the above-mentioned sum total is equal to 0.

For example if $(a_1+a_2-m_2)=0$ then

$$f(a_1, a_2, \dots, a_n) = \prod_{l=1}^{n-1} \prod_{i=1}^{n-1} ((a_1+a_2+\dots+a_l)-m_i) = 0$$

Also there are $n!/{}_n C_2$ expressions, which are in the form of (3), that include $(a_1+a_2-m_2)$ in.

Whenever the fact that $(x_{\pi(1)}+x_{\pi(2)}+\dots+x_{\pi(l)})-m_i=0$ is found, then the expressions in the form of (3), the values of which are 0, newly increased, in the condition that there is at least one expression that includes $(x_{\pi(1)}+x_{\pi(2)}+\dots+x_{\pi(l)})-m_i$ and its value is not found to be 0 yet. The number of increase is, at most, $n!/({}_n C_1)$. For any l the largest increasing number is $n!/({}_n C_1) = (n-1)!$, because ${}_n C_1 \leq {}_n C_1$.

According to the assumption above, the possible largest number of the expressions whose values are 0 is $(n-1)! \times (n-1)$.

As a result at least $n! - (n-1)!(n-1) = (n-1)!$ expressions remain to be nonzero.

This completes Theorem 2. □

In fact, the condition (21) above is not necessarily guaranteed [4], so we can not apply Theorem 2 easily.

5. Discussion and conclusion

As we explained in the introduction, it is said that this grasshopper problem can be proved only by elementary and inductive methods(see [1]), for example, by drawing a real axis on paper.

And if they intend to solve by the current method we have shown, there is not perfection yet.

We can easily assume anti-symmetry of the polynomial function (4). But there is a big drawback, that is to say, 'singularity'. It is not easy to analyze when n is more than 3.

In short, we are still destined to solve elementarily and deductively, though in most cases, except for 'singularity', a grasshopper succeeds in jumping, judging from (4).

We plan to solve the grasshopper problem by analyzing equations for n 's larger than 3 with the aid of Theorem 2.

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Appendix

$$\begin{aligned}
(20) &= (x_1 - x_2)(x_1 - x_3)(x_1 - x_4)(x_1 - x_5)(x_2 - x_3)(x_2 - x_4)(x_2 - x_5)(x_3 - x_4)(x_3 - x_5)(x_4 - x_5) \\
&\times (616x_1^6 + 2440x_1^5x_2 + 4708x_1^4x_2^2 + 5744x_1^3x_2^3 + 4708x_1^2x_2^4 + 2440x_1x_2^5 + 616x_2^6 + 2440x_1^5x_3 \\
&+ 8332x_1^4x_2x_3 + 13692x_1^3x_2^2x_3 + 13692x_1^2x_2^3x_3 + 8332x_1x_2^4x_3 + 2440x_2^5x_3 + 4708x_1^4x_2^3 \\
&+ 13692x_1^3x_2x_2^3 + 18436x_1^2x_2^2x_3^2 + 13692x_1x_2^3x_3^2 + 4708x_2^4x_3^2 + 5744x_1^3x_3^3 + 13692x_1^2x_2x_3^3 \\
&+ 13692x_1x_2^2x_3^3 + 5744x_2^3x_3^3 + 4708x_1^2x_4^3 + 8332x_1x_2x_3^4 + 4708x_2^2x_3^4 + 2440x_1x_3^5 + 2440x_2x_3^5 \\
&+ 616x_3^6 + 2440x_1^5x_4 + 8332x_1^4x_2x_4 + 13692x_1^3x_2^2x_4 + 13692x_1^2x_2^3x_4 + 8332x_1x_2^4x_4 \\
&+ 2440x_2^5x_4 + 8332x_1^4x_3x_4 + 24040x_1^3x_2x_3x_4 + 32280x_1^2x_2^2x_3x_4 \\
&+ 24040x_1x_2^3x_3x_4 + 8332x_2^4x_3x_4 + 13692x_1^3x_2^3x_4 + 32280x_1^2x_2x_2^3x_4 + 32280x_1x_2^2x_2^3x_4 \\
&+ 13692x_2^3x_2^2x_4 + 13692x_1^2x_3^3x_4 + 24040x_1x_2x_3^3x_4 + 13692x_2^2x_3^3x_4 + 8332x_1x_3^4x_4 \\
&+ 8332x_2x_3^4x_4 + 2440x_3^5x_4 + 4708x_1^4x_4^2 + 13692x_1^3x_2x_4^2 + 18436x_1^2x_2^2x_4^2 + 13692x_1x_2^3x_4^2 \\
&+ 4708x_2^4x_4^2 + 13692x_1^3x_3x_4^2 + 32280x_1^2x_2x_3x_4^2 + 32280x_1x_2^2x_3x_4^2 + 13692x_2^3x_3x_4^2 \\
&+ 18436x_1^2x_3^2x_4^2 + 32280x_1x_2x_3^2x_4^2 + 18436x_2^2x_3^2x_4^2 + 13692x_1x_3^3x_4^2 + 13692x_2x_3^3x_4^2 \\
&+ 4708x_3^4x_4^2 + 5744x_1^3x_4^3 + 13692x_1^2x_2x_4^3 + 13692x_1x_2^2x_4^3 \\
&+ 5744x_2^3x_4^3 + 13692x_1^2x_3x_4^3 + 24040x_1x_2x_3x_4^3 + 13692x_2^2x_3x_4^3 \\
&+ 13692x_1x_2^3x_4^3 + 13692x_2x_2^3x_4^3 + 5744x_3^3x_4^3 + 4708x_1^2x_4^4 + 8332x_1x_2x_4^4 \\
&+ 4708x_2^2x_4^4 + 8332x_1x_3x_4^4 + 8332x_2x_3x_4^4 + 4708x_3^2x_4^4 + 2440x_1x_4^5 + 2440x_2x_4^5 \\
&+ 2440x_3x_4^5 + 616x_4^6 + 2440x_1^5x_5 + 8332x_1^4x_2x_5 + 13692x_1^3x_2^2x_5 + 13692x_1^2x_2^3x_5 \\
&+ 8332x_1x_2^4x_5 + 2440x_2^5x_5 + 8332x_1^4x_3x_5 + 24040x_1^3x_2x_3x_5 + 32280x_1^2x_2^2x_3x_5 \\
&+ 24040x_1x_2^3x_3x_5 + 8332x_2^4x_3x_5 + 13692x_1^3x_2^3x_5 + 32280x_1^2x_2x_2^3x_5 \\
&+ 32280x_1x_2^2x_2^3x_5 + 13692x_2^3x_2^3x_5 + 13692x_1^2x_3^3x_5 + 24040x_1x_2x_3^3x_5 \\
&+ 13692x_2^2x_3^3x_5 + 8332x_1x_3^4x_5 + 8332x_2x_3^4x_5 + 2440x_3^5x_5 \\
&+ 8332x_1^4x_4x_5 + 24040x_1^3x_2x_4x_5 + 32280x_1^2x_2^2x_4x_5 + 24040x_1x_2^3x_4x_5 \\
&+ 8332x_2^4x_4x_5 + 24040x_1^3x_3x_4x_5 + 56328x_1^2x_2x_3x_4x_5 + 56328x_1x_2^2x_3x_4x_5 \\
&+ 24040x_2^3x_3x_4x_5 + 32280x_1^2x_2^3x_4x_5 + 56328x_1x_2x_2^3x_4x_5 + 32280x_2^2x_2^3x_4x_5 \\
&+ 24040x_1x_2^3x_4x_5 + 24040x_2x_2^3x_4x_5 + 8332x_3^4x_4x_5 + 13692x_1^3x_4^2x_5 \\
&+ 32280x_1^2x_2x_2^2x_5 + 32280x_1x_2^2x_2^2x_5 + 13692x_2^3x_2^2x_5 + 32280x_1^2x_3x_2^2x_5 \\
&+ 56328x_1x_2x_3x_2^2x_5 + 32280x_2^2x_3x_2^2x_5 + 32280x_1x_3^2x_2^2x_5 + 32280x_2x_2^3x_2^2x_5 \\
&+ 13692x_3^3x_2^2x_5 + 13692x_1^2x_3^3x_5 + 24040x_1x_2x_3^3x_5 + 13692x_2^2x_3^3x_5 \\
&+ 24040x_1x_3x_3^3x_5 + 24040x_2x_3x_3^3x_5 + 13692x_3^2x_3^3x_5 + 8332x_1x_4^4x_5 \\
&+ 8332x_2x_4^4x_5 + 8332x_3x_4^4x_5 + 2440x_4^5x_5 + 4708x_1^4x_5^2 + 13692x_1^3x_2x_5^2 \\
&+ 18436x_1^2x_2^2x_5^2 + 13692x_1x_2^3x_5^2 + 4708x_2^4x_5^2 + 13692x_1^3x_3x_5^2 \\
&+ 32280x_1^2x_2x_3x_5^2 + 32280x_1x_2^2x_3x_5^2 + 13692x_2^3x_3x_5^2 + 18436x_1^2x_3^2x_5^2 \\
&+ 32280x_1x_2x_2^3x_5^2 + 18436x_2^2x_2^3x_5^2 + 13692x_1x_3^3x_5^2 + 13692x_2x_2^3x_5^2 \\
&+ 4708x_3^4x_5^2 + 13692x_1^3x_4x_5^2 + 32280x_1^2x_2x_4x_5^2 + 32280x_1x_2^2x_4x_5^2 \\
&+ 13692x_2^3x_4x_5^2 + 32280x_1^2x_3x_4x_5^2 + 56328x_1x_2x_3x_4x_5^2 + 32280x_2^2x_3x_4x_5^2 \\
&+ 32280x_1x_2^3x_4x_5^2 + 32280x_2x_2^3x_4x_5^2 + 13692x_3^3x_4x_5^2 + 18436x_1^2x_4^2x_5^2 \\
&+ 32280x_1x_2x_2^2x_5^2 + 18436x_2^2x_2^2x_5^2 + 32280x_1x_3x_4^2x_5^2 + 32280x_2x_3x_4^2x_5^2 \\
&+ 18436x_2^3x_4^2x_5^2 + 13692x_1x_4^3x_5^2 + 13692x_2x_3^3x_5^2 + 13692x_3x_3^3x_5^2 \\
&+ 4708x_4^4x_5^2 + 5744x_1^3x_5^3 + 13692x_1^2x_2x_5^3 + 13692x_1x_2^2x_5^3 + 5744x_2^3x_5^3
\end{aligned}$$

$$\begin{aligned}
&+13692x_1^2x_3x_5^3+24040x_1x_2x_3x_5^3+13692x_2^2x_3x_5^3+13692x_1x_3^2x_5^3 \\
&+13692x_2x_3^2x_5^3+5744x_3^3x_5^3+13692x_1^2x_4x_5^3+24040x_1x_2x_4x_5^3 \\
&+13692x_2^2x_4x_5^3+24040x_1x_3x_4x_5^3+24040x_2x_3x_4x_5^3+13692x_3^2x_4x_5^3 \\
&+13692x_1x_4^2x_5^3+13692x_2x_4^2x_5^3+13692x_3x_4^2x_5^3+5744x_4^3x_5^3 \\
&+4708x_1^2x_5^4+8332x_1x_2x_5^4+4708x_2^2x_5^4+8332x_1x_3x_5^4+8332x_2x_3x_5^4 \\
&+4708x_3^2x_5^4+8332x_1x_4x_5^4+8332x_2x_4x_5^4+8332x_3x_4x_5^4+4708x_4^2x_5^4 \\
&+2440x_1x_5^5+2440x_2x_5^5+2440x_3x_5^5+2440x_4x_5^5+616x_5^6-1516x_1^5m_1 \\
&-5404x_1^4x_2m_1-9094x_1^3x_2^2m_1-9094x_1^2x_2^3m_1-5404x_1x_2^4m_1-1516x_2^5m_1 \\
&-5404x_1^4x_3m_1-16178x_1^3x_2x_3m_1-22010x_1^2x_2^2x_3m_1-16178x_1x_2^3x_3m_1-5404x_2^4x_3m_1 \\
&-9094x_1^3x_2^2m_1-22010x_1^2x_2x_3^2m_1-22010x_1x_2^2x_3^2m_1-9094x_2^3x_3^2m_1 \\
&-9094x_1^2x_3^3m_1-16178x_1x_2x_3^3m_1-9094x_2^2x_3^3m_1-5404x_1x_3^4m_1 \\
&-5404x_2x_3^4m_1-1516x_3^5m_1-5404x_1^4x_4m_1-16178x_1^3x_2x_4m_1-22010x_1^2x_2^2x_4m_1-16178x_1x_2^3x_4m_1 \\
&-5404x_2^4x_4m_1-16178x_1^3x_3x_4m_1-38946x_1^2x_2x_3x_4m_1-38946x_1x_2^2x_3x_4m_1 \\
&-16178x_2^3x_3x_4m_1-22010x_1^2x_3^2x_4m_1-38946x_1x_2x_3^2x_4m_1 \\
&-22010x_2^2x_3^2x_4m_1-16178x_1x_3^3x_4m_1-16178x_2x_3^3x_4m_1 \\
&-5404x_3^4x_4m_1-9094x_1^3x_4^2m_1 \\
&-22010x_1^2x_2x_4^2m_1-22010x_1x_2^2x_4^2m_1-9094x_2^3x_4^2m_1-22010x_1^2x_3x_4^2m_1-38946x_1x_2x_3x_4^2m_1 \\
&-22010x_2^2x_3x_4^2m_1-22010x_1x_3^2x_4^2m_1-22010x_2x_3^2x_4^2m_1 \\
&-9094x_3^3x_4^2m_1-9094x_1^2x_4^3m_1 \\
&-16178x_1x_2x_4^3m_1-9094x_2^2x_4^3m_1-16178x_1x_3x_4^3m_1-16178x_2x_3x_4^3m_1 \\
&-9094x_2^3x_4^3m_1-5404x_1x_4^4m_1 \\
&-5404x_2x_4^4m_1-5404x_3x_4^4m_1-1516x_4^5m_1-5404x_1^4x_5m_1-16178x_1^3x_2x_5m_1-22010x_1^2x_2^2x_5m_1 \\
&-16178x_1x_2^3x_5m_1-5404x_2^4x_5m_1-16178x_1^3x_3x_5m_1-38946x_1^2x_2x_3x_5m_1 \\
&-38946x_1x_2^2x_3x_5m_1-16178x_2^3x_3x_5m_1 \\
&-22010x_1^2x_2^2x_3x_5m_1-38946x_1x_2x_3^2x_5m_1-22010x_2^2x_3^2x_5m_1 \\
&-16178x_1x_3^3x_5m_1-16178x_2x_3^3x_5m_1-5404x_4^3x_5m_1 \\
&-16178x_1^3x_4x_5m_1-38946x_1^2x_2x_4x_5m_1-38946x_1x_2^2x_4x_5m_1-16178x_2^3x_4x_5m_1-38946x_1^2x_3x_4x_5m_1 \\
&-68700x_1x_2x_3x_4x_5m_1-38946x_2^2x_3x_4x_5m_1-38946x_1x_3^2x_4x_5m_1 \\
&-38946x_2x_3^2x_4x_5m_1-16178x_3^3x_4x_5m_1-22010x_1^2x_4^2x_5m_1-38946x_1x_2x_4^2x_5m_1-22010x_2^2x_4^2x_5m_1 \\
&-38946x_1x_3x_4^2x_5m_1-38946x_2x_3x_4^2x_5m_1-22010x_3^2x_4^2x_5m_1-16178x_1x_4^3x_5m_1-16178x_2x_4^3x_5m_1 \\
&-16178x_3x_4^3x_5m_1-5404x_4^4x_5m_1-9094x_1^3x_5^2m_1-22010x_1^2x_2x_5^2m_1-22010x_1x_2^2x_5^2m_1 \\
&-9094x_2^3x_5^2m_1-22010x_1^2x_3x_5^2m_1-38946x_1x_2x_3x_5^2m_1-22010x_2^2x_3x_5^2m_1-22010x_1x_3^2x_5^2m_1 \\
&-22010x_2x_3^2x_5^2m_1-9094x_3^3x_5^2m_1-22010x_1^2x_4x_5^2m_1-38946x_1x_2x_4x_5^2m_1-22010x_2^2x_4x_5^2m_1 \\
&-38946x_1x_3x_4x_5^2m_1-38946x_2x_3x_4x_5^2m_1-22010x_3^2x_4x_5^2m_1-22010x_1x_4^2x_5^2m_1-22010x_2x_4^2x_5^2m_1 \\
&-22010x_3x_4^2x_5^2m_1-9094x_4^3x_5^2m_1-9094x_1^2x_5^3m_1-16178x_1x_2x_5^3m_1-9094x_2^2x_5^3m_1 \\
&-16178x_1x_3x_5^3m_1-16178x_2x_3x_5^3m_1-9094x_3^2x_5^3m_1-16178x_1x_4x_5^3m_1-16178x_2x_4x_5^3m_1 \\
&-16178x_3x_4x_5^3m_1-9094x_4^2x_5^3m_1-5404x_1x_5^4m_1-5404x_2x_5^4m_1-5404x_3x_5^4m_1-5404x_4x_5^4m_1 \\
&-1516x_5^5m_1+1305x_1^4m_1^2+4020x_1^3x_2m_1^2+5523x_1^2x_2^2m_1^2+4020x_1x_2^3m_1^2+1305x_2^4m_1^2 \\
&+4020x_1^3x_3m_1^2+9883x_1^2x_2x_3m_1^2+9883x_1x_2^2x_3m_1^2+4020x_2^3x_3m_1^2+5523x_1^2x_3^2m_1^2 \\
&+9883x_1x_2x_3^2m_1^2+5523x_2^2x_3^2m_1^2+4020x_1x_3^3m_1^2+4020x_2x_3^3m_1^2+1305x_4^3m_1^2 \\
&+4020x_1^3x_4m_1^2+9883x_1^2x_2x_4m_1^2+9883x_1x_2^2x_4m_1^2+4020x_2^3x_4m_1^2+9883x_1^2x_3x_4m_1^2
\end{aligned}$$

$$\begin{aligned}
&+17634x_1x_2x_3x_4m_1^2+9883x_2^2x_3x_4m_1^2+9883x_1x_3^2x_4m_1^2+9883x_2x_3^2x_4m_1^2+4020x_3^3x_4m_1^2 \\
&+5523x_1^2x_4^2m_1^2+9883x_1x_2x_4^2m_1^2+5523x_2^2x_4^2m_1^2+9883x_1x_3x_4^2m_1^2+9883x_2x_3x_4^2m_1^2 \\
&+5523x_3^2x_4^2m_1^2+4020x_1x_4^3m_1^2+4020x_2x_4^3m_1^2+4020x_3x_4^3m_1^2+1305x_4^4m_1^2 \\
&+4020x_1^3x_5m_1^2+9883x_1^2x_2x_5m_1^2+9883x_1x_2^2x_5m_1^2+4020x_2^3x_5m_1^2+9883x_1^2x_3x_5m_1^2 \\
&+17634x_1x_2x_3x_5m_1^2+9883x_2^2x_3x_5m_1^2+9883x_1x_3^2x_5m_1^2+9883x_2x_3^2x_5m_1^2+4020x_3^3x_5m_1^2 \\
&+9883x_1^2x_4x_5m_1^2+17634x_1x_2x_4x_5m_1^2+9883x_2^2x_4x_5m_1^2+17634x_1x_3x_4x_5m_1^2 \\
&+17634x_2x_3x_4x_5m_1^2+9883x_3^2x_4x_5m_1^2+9883x_1x_4^2x_5m_1^2+9883x_2x_4^2x_5m_1^2+9883x_3x_4^2x_5m_1^2 \\
&+4020x_4^3x_5m_1^2+5523x_1^2x_5^2m_1^2+9883x_1x_2x_5^2m_1^2+5523x_2^2x_5^2m_1^2+9883x_1x_3x_5^2m_1^2 \\
&+9883x_2x_3x_5^2m_1^2+5523x_3^2x_5^2m_1^2+9883x_1x_4x_5^2m_1^2+9883x_2x_4x_5^2m_1^2+9883x_3x_4x_5^2m_1^2 \\
&+5523x_4^2x_5^2m_1^2+4020x_1x_5^3m_1^2+4020x_2x_5^3m_1^2+4020x_3x_5^3m_1^2+4020x_4x_5^3m_1^2+1305x_5^4m_1^2 \\
&-459x_1^3m_1^3-1152x_1^2x_2m_1^3-1152x_1x_2^2m_1^3-459x_3^3m_1^3-1152x_1^2x_3m_1^3-2079x_1x_2x_3m_1^3 \\
&-1152x_2^2x_3m_1^3-1152x_1x_3^2m_1^3-1152x_2x_3^2m_1^3-459x_4^3m_1^3-1152x_1^2x_4m_1^3-2079x_1x_2x_4m_1^3 \\
&-1152x_2^2x_4m_1^3-2079x_1x_3x_4m_1^3-2079x_2x_3x_4m_1^3-1152x_3^2x_4m_1^3-1152x_1x_4^2m_1^3-1152x_2x_4^2m_1^3 \\
&-1152x_3x_4^2m_1^3-459x_5^3m_1^3-1152x_1^2x_5m_1^3-2079x_1x_2x_5m_1^3 \\
&-1152x_2^2x_5m_1^3-2079x_1x_3x_5m_1^3-2079x_2x_3x_5m_1^3-1152x_3^2x_5m_1^3 \\
&-2079x_1x_4x_5m_1^3-2079x_2x_4x_5m_1^3-2079x_3x_4x_5m_1^3-1152x_4^2x_5m_1^3 \\
&-1152x_1x_5^2m_1^3-1152x_2x_5^2m_1^3-1152x_3x_5^2m_1^3-1152x_4x_5^2m_1^3 \\
&-459x_5^3m_1^3+54x_1^2m_1^4+99x_1x_2m_1^4+54x_2^2m_1^4+99x_1x_3m_1^4 \\
&+99x_2x_3m_1^4+54x_3^2m_1^4+99x_1x_4m_1^4+99x_2x_4m_1^4 \\
&+99x_3x_4m_1^4+54x_4^2m_1^4+99x_1x_5m_1^4+99x_2x_5m_1^4+99x_3x_5m_1^4+99x_4x_5m_1^4+54x_5^2m_1^4-1516x_1^5m_2 \\
&-5404x_1^4x_2m_2-9094x_1^3x_2^2m_2-9094x_1^2x_3^2m_2-5404x_1x_4^2m_2 \\
&-1516x_2^5m_2-5404x_1^4x_3m_2-16178x_1^3x_2x_3m_2 \\
&-22010x_1^2x_2^2x_3m_2-16178x_1x_3^2x_3m_2-5404x_2^4x_3m_2-9094x_1^3x_3^2m_2 \\
&-22010x_1^2x_2x_3^2m_2-22010x_1x_2^2x_3^2m_2 \\
&-9094x_3^3x_3^2m_2-9094x_1^2x_3^3m_2-16178x_1x_2x_3^3m_2 \\
&-9094x_2^2x_3^3m_2-5404x_1x_4^3m_2-5404x_2x_4^3m_2-1516x_3^5m_2 \\
&-5404x_4^4x_4m_2-16178x_1^3x_2x_4m_2-22010x_1^2x_2^2x_4m_2 \\
&-16178x_1x_3^3x_4m_2-5404x_2^4x_4m_2-16178x_1^3x_3x_4m_2 \\
&-38946x_1^2x_2x_3x_4m_2-38946x_1x_2^2x_3x_4m_2-16178x_3^2x_3x_4m_2 \\
&-22010x_2^2x_3^2x_4m_2-38946x_1x_2x_3^2x_4m_2-22010x_2^2x_3^2x_4m_2 \\
&-16178x_1x_3^3x_4m_2-16178x_2x_3^3x_4m_2-5404x_4^3x_4m_2-9094x_1^3x_4^2m_2 \\
&-22010x_1^2x_2x_4^2m_2-22010x_1x_2^2x_4^2m_2 \\
&-9094x_2^3x_4^2m_2-22010x_1^2x_3x_4^2m_2-38946x_1x_2x_3x_4^2m_2-22010x_2^2x_3x_4^2m_2-22010x_1x_3^2x_4^2m_2 \\
&-22010x_2x_3^2x_4^2m_2-9094x_3^3x_4^2m_2-9094x_1^2x_4^3m_2-16178x_1x_2x_4^3m_2 \\
&-9094x_2^2x_4^3m_2-16178x_1x_3x_4^3m_2 \\
&-16178x_2x_3x_4^3m_2-9094x_3^2x_4^3m_2-5404x_1x_4^4m_2 \\
&-5404x_2x_4^4m_2-5404x_3x_4^4m_2-1516x_5^5m_2-5404x_1^4x_5m_2 \\
&-16178x_1^3x_2x_5m_2-22010x_1^2x_2^2x_5m_2-16178x_1x_3^2x_5m_2-5404x_2^4x_5m_2 \\
&-16178x_1^3x_3x_5m_2-38946x_1^2x_2x_3x_5m_2 \\
&-38946x_1x_2^2x_3x_5m_2-16178x_3^2x_3x_5m_2-22010x_1^2x_3^2x_5m_2-38946x_1x_2x_3^2x_5m_2-22010x_2^2x_3^2x_5m_2 \\
&-16178x_1x_3^3x_5m_2-16178x_2x_3^3x_5m_2-5404x_4^3x_5m_2-16178x_1^3x_4x_5m_2
\end{aligned}$$

$$\begin{aligned}
& -38946x_1^2x_2x_4x_5m_2 - 38946x_1x_2^2x_4x_5m_2 \\
& -16178x_2^3x_4x_5m_2 - 38946x_1^2x_3x_4x_5m_2 - 68700x_1x_2x_3x_4x_5m_2 \\
& -38946x_2^2x_3x_4x_5m_2 - 38946x_1x_3^2x_4x_5m_2 \\
& -38946x_2x_3^2x_4x_5m_2 - 16178x_3^3x_4x_5m_2 - 22010x_1^2x_4^2x_5m_2 - 38946x_1x_2x_4^2x_5m_2 - 22010x_2^2x_4^2x_5m_2 \\
& -38946x_1x_3x_4^2x_5m_2 - 38946x_2x_3x_4^2x_5m_2 - 22010x_3^2x_4^2x_5m_2 - 16178x_1x_4^3x_5m_2 \\
& -16178x_2x_3^3x_5m_2 - 16178x_3x_4^3x_5m_2 - 5404x_4^4x_5m_2 - 9094x_1^3x_5^2m_2 - 22010x_1^2x_2^2x_5^2m_2 \\
& -22010x_1x_2^2x_5^2m_2 - 9094x_2^3x_5^2m_2 - 22010x_1^2x_3x_5^2m_2 - 38946x_1x_2x_3x_5^2m_2 - 22010x_2^2x_3x_5^2m_2 \\
& -22010x_1x_3^2x_5^2m_2 - 22010x_2x_3^2x_5^2m_2 - 9094x_3^3x_5^2m_2 - 22010x_1^2x_4x_5^2m_2 - 38946x_1x_2x_4x_5^2m_2 \\
& -22010x_2^2x_4x_5^2m_2 - 38946x_1x_3x_4x_5^2m_2 - 38946x_2x_3x_4x_5^2m_2 - 22010x_3^2x_4x_5^2m_2 - 22010x_1x_4^2x_5^2m_2 \\
& -22010x_2x_4^2x_5^2m_2 - 22010x_3x_4^2x_5^2m_2 - 9094x_4^3x_5^2m_2 - 9094x_1^2x_5^3m_2 - 16178x_1x_2x_5^3m_2 \\
& -9094x_2^2x_5^3m_2 - 16178x_1x_3x_5^3m_2 - 16178x_2x_3x_5^3m_2 - 9094x_3^2x_5^3m_2 - 16178x_1x_4x_5^3m_2 \\
& -16178x_2x_4x_5^3m_2 - 16178x_3x_4x_5^3m_2 - 9094x_4^2x_5^3m_2 - 5404x_1x_5^4m_2 - 5404x_2x_5^4m_2 \\
& -5404x_3x_5^4m_2 - 5404x_4x_5^4m_2 - 1516x_5^5m_2 + 3450x_1^4m_1m_2 + 10664x_1^3x_2m_1m_2 + 14674x_1^2x_2^2m_1m_2 \\
& + 10664x_1x_2^3m_1m_2 + 3450x_2^4m_1m_2 + 10664x_1^3x_3m_1m_2 + 26298x_1^2x_2x_3m_1m_2 + 26298x_1x_2^2x_3m_1m_2 \\
& + 10664x_2^3x_3m_1m_2 + 14674x_1^2x_3^2m_1m_2 + 26298x_1x_2x_3^2m_1m_2 + 14674x_2^2x_3^2m_1m_2 + 10664x_1x_3^3m_1m_2 \\
& + 10664x_2x_3^3m_1m_2 + 3450x_3^4m_1m_2 + 10664x_1^3x_4m_1m_2 \\
& + 26298x_1^2x_2x_4m_1m_2 + 26298x_1x_2^2x_4m_1m_2 \\
& + 10664x_2^3x_4m_1m_2 + 26298x_1^2x_3x_4m_1m_2 + 47004x_1x_2x_3x_4m_1m_2 + 26298x_2^2x_3x_4m_1m_2 \\
& + 26298x_1x_3^2x_4m_1m_2 + 26298x_2x_3^2x_4m_1m_2 + 10664x_3^3x_4m_1m_2 + 14674x_1^2x_4^2m_1m_2 \\
& + 26298x_1x_2x_4^2m_1m_2 + 14674x_2^2x_4^2m_1m_2 + 26298x_1x_3x_4^2m_1m_2 + 26298x_2x_3x_4^2m_1m_2 \\
& + 14674x_3^2x_4^2m_1m_2 + 10664x_1x_4^3m_1m_2 + 10664x_2x_4^3m_1m_2 + 10664x_3x_4^3m_1m_2 \\
& + 3450x_4^4m_1m_2 + 10664x_1^3x_5m_1m_2 + 26298x_1^2x_2x_5m_1m_2 + 26298x_1x_2^2x_5m_1m_2 + 10664x_2^3x_5m_1m_2 \\
& + 26298x_2^2x_3x_5m_1m_2 + 47004x_1x_2x_3x_5m_1m_2 + 26298x_2^2x_3x_5m_1m_2 + 26298x_1x_3^2x_5m_1m_2 \\
& + 26298x_2x_3^2x_5m_1m_2 + 10664x_3^3x_5m_1m_2 + 26298x_1^2x_4x_5m_1m_2 + 47004x_1x_2x_4x_5m_1m_2 \\
& + 26298x_2^2x_4x_5m_1m_2 + 47004x_1x_3x_4x_5m_1m_2 + 47004x_2x_3x_4x_5m_1m_2 + 26298x_3^2x_4x_5m_1m_2 \\
& + 26298x_1x_4^2x_5m_1m_2 + 26298x_2x_4^2x_5m_1m_2 + 26298x_3x_4^2x_5m_1m_2 + 10664x_4^3x_5m_1m_2 \\
& + 14674x_1^2x_5^2m_1m_2 + 26298x_1x_2x_5^2m_1m_2 + 14674x_2^2x_5^2m_1m_2 \\
& + 26298x_1x_3x_5^2m_1m_2 + 26298x_2x_3x_5^2m_1m_2 + 14674x_3^2x_5^2m_1m_2 \\
& + 26298x_1x_4x_5^2m_1m_2 + 26298x_2x_4x_5^2m_1m_2 + 26298x_3x_4x_5^2m_1m_2 + 14674x_4^2x_5^2m_1m_2 \\
& + 10664x_1x_5^3m_1m_2 + 10664x_2x_5^3m_1m_2 + 10664x_3x_5^3m_1m_2 + 10664x_4x_5^3m_1m_2 \\
& + 3450x_5^4m_1m_2 - 2663x_1^3m_1^2m_2 - 6694x_1^2x_2m_1^2m_2 - 6694x_1x_2^2m_1^2m_2 - 2663x_2^3m_1^2m_2 \\
& - 6694x_1^2x_3m_1^2m_2 - 12093x_1x_2x_3m_1^2m_2 - 6694x_2^2x_3m_1^2m_2 - 6694x_1x_3^2m_1^2m_2 \\
& - 6694x_2x_3^2m_1^2m_2 - 2663x_3^3m_1^2m_2 - 6694x_1^2x_4m_1^2m_2 - 12093x_1x_2x_4m_1^2m_2 \\
& - 6694x_2^2x_4m_1^2m_2 - 12093x_1x_3x_4m_1^2m_2 - 12093x_2x_3x_4m_1^2m_2 - 6694x_3^2x_4m_1^2m_2 \\
& - 6694x_1x_4^2m_1^2m_2 - 6694x_2x_4^2m_1^2m_2 - 6694x_3x_4^2m_1^2m_2 \\
& - 2663x_4^3m_1^2m_2 - 6694x_1^2x_5m_1^2m_2 - 12093x_1x_2x_5m_1^2m_2 - 6694x_2^2x_5m_1^2m_2 \\
& - 12093x_1x_3x_5m_1^2m_2 - 12093x_2x_3x_5m_1^2m_2 - 6694x_3^2x_5m_1^2m_2 \\
& - 12093x_1x_4x_5m_1^2m_2 - 12093x_2x_4x_5m_1^2m_2 - 12093x_3x_4x_5m_1^2m_2 - 6694x_4^2x_5m_1^2m_2 \\
& - 6694x_1x_5^2m_1^2m_2 - 6694x_2x_5^2m_1^2m_2 - 6694x_3x_5^2m_1^2m_2 \\
& - 6694x_4x_5^2m_1^2m_2 - 2663x_5^3m_1^2m_2 + 798x_1^2m_1^3m_2 + 1458x_1x_2m_1^3m_2 + 798x_2^2m_1^3m_2 \\
& + 1458x_1x_3m_1^3m_2 + 1458x_2x_3m_1^3m_2 + 798x_3^2m_1^3m_2 + 1458x_1x_4m_1^3m_2
\end{aligned}$$

$$\begin{aligned}
&+1458x_2x_4m_1^3m_2+1458x_3x_4m_1^3m_2+798x_4^2m_1^3m_2+1458x_1x_5m_1^3m_2 \\
&+1458x_2x_5m_1^3m_2+1458x_3x_5m_1^3m_2+1458x_4x_5m_1^3m_2+798x_5^2m_1^3m_2 \\
&-72x_1m_1^4m_2-72x_2m_1^4m_2-72x_3m_1^4m_2-72x_4m_1^4m_2-72x_5m_1^4m_2 \\
&+1305x_1^4m_2^2+4020x_1^3x_2m_2^2+5523x_1^2x_2^2m_2^2+4020x_1x_2^3m_2^2+1305x_2^4m_2^2 \\
&+4020x_1^3x_3m_2^2+9883x_1^2x_2x_3m_2^2+9883x_1x_2^2x_3m_2^2+4020x_2^3x_3m_2^2+5523x_1^2x_3^2m_2^2 \\
&+9883x_1x_2x_3^2m_2^2+5523x_2^2x_3^2m_2^2+4020x_1x_3^3m_2^2+4020x_2x_3^3m_2^2+1305x_3^4m_2^2 \\
&+4020x_1^3x_4m_2^2+9883x_1^2x_2x_4m_2^2+9883x_1x_2^2x_4m_2^2 \\
&+4020x_2^3x_4m_2^2+9883x_1^2x_3x_4m_2^2+17634x_1x_2x_3x_4m_2^2+9883x_2^2x_3x_4m_2^2 \\
&+9883x_1x_3^2x_4m_2^2+9883x_2x_3^2x_4m_2^2+4020x_3^3x_4m_2^2+5523x_1^2x_4^2m_2^2+9883x_1x_2x_4^2m_2^2 \\
&+5523x_2^2x_4^2m_2^2+9883x_1x_3x_4^2m_2^2+9883x_2x_3x_4^2m_2^2+5523x_3^2x_4^2m_2^2+4020x_1x_4^3m_2^2 \\
&+4020x_2x_4^3m_2^2+4020x_3x_4^3m_2^2+1305x_4^4m_2^2+4020x_1^3x_5m_2^2+9883x_1^2x_2x_5m_2^2 \\
&+9883x_1x_2^2x_5m_2^2+4020x_2^3x_5m_2^2+9883x_1^2x_3x_5m_2^2+17634x_1x_2x_3x_5m_2^2 \\
&+9883x_2^2x_3x_5m_2^2+9883x_1x_3^2x_5m_2^2+9883x_2x_3^2x_5m_2^2+4020x_3^3x_5m_2^2 \\
&+9883x_1^2x_4x_5m_2^2+17634x_1x_2x_4x_5m_2^2+9883x_2^2x_4x_5m_2^2+17634x_1x_3x_4x_5m_2^2 \\
&+17634x_2x_3x_4x_5m_2^2+9883x_3^2x_4x_5m_2^2+9883x_1x_4^2x_5m_2^2+9883x_2x_4^2x_5m_2^2 \\
&+9883x_3x_4^2x_5m_2^2+4020x_4^3x_5m_2^2+5523x_1^2x_5^2m_2^2+9883x_1x_2x_5^2m_2^2+5523x_2^2x_5^2m_2^2 \\
&+9883x_1x_3x_5^2m_2^2+9883x_2x_3x_5^2m_2^2+5523x_3^2x_5^2m_2^2+9883x_1x_4x_5^2m_2^2 \\
&+9883x_2x_4x_5^2m_2^2+9883x_3x_4x_5^2m_2^2+5523x_4^2x_5^2m_2^2+4020x_1x_5^3m_2^2 \\
&+4020x_2x_5^3m_2^2+4020x_3x_5^3m_2^2+4020x_4x_5^3m_2^2+1305x_5^4m_2^2-2663x_1^3m_1m_2^2 \\
&-6694x_1^2x_2m_1m_2^2-6694x_1x_2^2m_1m_2^2-2663x_2^3m_1m_2^2-6694x_1^2x_3m_1m_2^2 \\
&-12093x_1x_2x_3m_1m_2^2-6694x_2^2x_3m_1m_2^2-6694x_1x_3^2m_1m_2^2-6694x_2x_3^2m_1m_2^2 \\
&-2663x_3^3m_1m_2^2-6694x_1^2x_4m_1m_2^2-12093x_1x_2x_4m_1m_2^2-6694x_2^2x_4m_1m_2^2 \\
&-12093x_1x_3x_4m_1m_2^2-12093x_2x_3x_4m_1m_2^2-6694x_3^2x_4m_1m_2^2-6694x_1x_4^2m_1m_2^2 \\
&-6694x_2x_4^2m_1m_2^2-6694x_3x_4^2m_1m_2^2-2663x_4^3m_1m_2^2-6694x_1^2x_5m_1m_2^2 \\
&-12093x_1x_2x_5m_1m_2^2-6694x_2^2x_5m_1m_2^2-12093x_1x_3x_5m_1m_2^2-12093x_2x_3x_5m_1m_2^2 \\
&-6694x_3^2x_5m_1m_2^2-12093x_1x_4x_5m_1m_2^2-12093x_2x_4x_5m_1m_2^2-12093x_3x_4x_5m_1m_2^2 \\
&-6694x_4^2x_5m_1m_2^2-6694x_1x_5^2m_1m_2^2-6694x_2x_5^2m_1m_2^2-6694x_3x_5^2m_1m_2^2 \\
&-6694x_4x_5^2m_1m_2^2-2663x_5^3m_1m_2^2+1748x_1^2m_1^2m_2^2+3190x_1x_2m_1^2m_2^2 \\
&+1748x_2^2m_1^2m_2^2+3190x_1x_3m_1^2m_2^2+3190x_2x_3m_1^2m_2^2+1748x_3^2m_1^2m_2^2 \\
&+3190x_1x_4m_1^2m_2^2+3190x_2x_4m_1^2m_2^2+3190x_3x_4m_1^2m_2^2+1748x_4^2m_1^2m_2^2 \\
&+3190x_1x_5m_1^2m_2^2+3190x_2x_5m_1^2m_2^2+3190x_3x_5m_1^2m_2^2+3190x_4x_5m_1^2m_2^2 \\
&+1748x_5^2m_1^2m_2^2-402x_1m_1^3m_2^2-402x_2m_1^3m_2^2-402x_3m_1^3m_2^2-402x_4m_1^3m_2^2 \\
&-402x_5m_1^3m_2^2+21m_1^4m_2^2-459x_1^3m_2^3-1152x_1^2x_2m_2^3-1152x_1x_2^2m_2^3 \\
&-459x_2^3m_2^3-1152x_1^2x_3m_2^3-2079x_1x_2x_3m_2^3-1152x_2^2x_3m_2^3-1152x_1x_3^2m_2^3 \\
&-1152x_2x_3^2m_2^3-459x_3^3m_2^3-1152x_1^2x_4m_2^3-2079x_1x_2x_4m_2^3-1152x_2^2x_4m_2^3 \\
&-2079x_1x_3x_4m_2^3-2079x_2x_3x_4m_2^3-1152x_3^2x_4m_2^3-1152x_1x_4^2m_2^3-1152x_2x_4^2m_2^3 \\
&-1152x_3x_4^2m_2^3-459x_4^3m_2^3-1152x_1^2x_5m_2^3-2079x_1x_2x_5m_2^3-1152x_2^2x_5m_2^3 \\
&-2079x_1x_3x_5m_2^3-2079x_2x_3x_5m_2^3-1152x_3^2x_5m_2^3-2079x_1x_4x_5m_2^3-2079x_2x_4x_5m_2^3 \\
&-2079x_3x_4x_5m_2^3-1152x_4^2x_5m_2^3-1152x_1x_5^2m_2^3-1152x_2x_5^2m_2^3-1152x_3x_5^2m_2^3 \\
&-1152x_4x_5^2m_2^3-459x_5^3m_2^3+798x_1^2m_1m_2^3+1458x_1x_2m_1m_2^3+798x_2^2m_1m_2^3 \\
&+1458x_1x_3m_1m_2^3+1458x_2x_3m_1m_2^3+798x_3^2m_1m_2^3+1458x_1x_4m_1m_2^3+1458x_2x_4m_1m_2^3
\end{aligned}$$

$$\begin{aligned}
&+1458x_3x_4m_1m_2^3+798x_4^2m_1m_2^3+1458x_1x_5m_1m_2^3+1458x_2x_5m_1m_2^3+1458x_3x_5m_1m_2^3 \\
&+1458x_4x_5m_1m_2^3+798x_5^2m_1m_2^3-402x_1m_1^2m_2^3-402x_2m_1^2m_2^3-402x_3m_1^2m_2^3 \\
&-402x_4m_1^2m_2^3-402x_5m_1^2m_2^3+54m_1^3m_2^3+54x_1^2m_2^4+99x_1x_2m_2^4+54x_2^2m_2^4 \\
&+99x_1x_3m_2^4+99x_2x_3m_2^4+54x_3^2m_2^4+99x_1x_4m_2^4+99x_2x_4m_2^4+99x_3x_4m_2^4 \\
&+54x_4^2m_2^4+99x_1x_5m_2^4+99x_2x_5m_2^4+99x_3x_5m_2^4+99x_4x_5m_2^4+54x_5^2m_2^4 \\
&-72x_1m_1m_2^4-72x_2m_1m_2^4-72x_3m_1m_2^4-72x_4m_1m_2^4-72x_5m_1m_2^4+21m_1^2m_2^4 \\
&-1516x_1^5m_3-5404x_1^4x_2m_3-9094x_1^3x_2^2m_3-9094x_1^2x_2^3m_3-5404x_1x_2^4m_3 \\
&-1516x_2^5m_3-5404x_1^4x_3m_3-16178x_1^3x_2x_3m_3 \\
&-22010x_1^2x_2^2x_3m_3-16178x_1x_2^3x_3m_3 \\
&-5404x_2^4x_3m_3-9094x_1^3x_3^2m_3-22010x_1^2x_2x_3^2m_3-22010x_1x_2^2x_3^2m_3-9094x_2^3x_3^2m_3 \\
&-9094x_1^2x_3^3m_3-16178x_1x_2x_3^3m_3-9094x_2^2x_3^3m_3-5404x_1x_3^4m_3-5404x_2x_3^4m_3 \\
&-1516x_3^5m_3-5404x_1^4x_4m_3-16178x_1^3x_2x_4m_3-22010x_1^2x_2^2x_4m_3-16178x_1x_2^3x_4m_3 \\
&-5404x_2^4x_4m_3-16178x_1^3x_3x_4m_3-38946x_1^2x_2x_3x_4m_3-38946x_1x_2^2x_3x_4m_3 \\
&-16178x_2^3x_3x_4m_3-22010x_1^2x_3^2x_4m_3-38946x_1x_2x_3^2x_4m_3-22010x_2^2x_3^2x_4m_3 \\
&-16178x_1x_3^3x_4m_3-16178x_2x_3^3x_4m_3-5404x_3^4x_4m_3-9094x_1^3x_4^2m_3 \\
&-22010x_1^2x_2x_4^2m_3-22010x_1x_2^2x_4^2m_3 \\
&-9094x_2^3x_4^2m_3-22010x_1^2x_3x_4^2m_3-38946x_1x_2x_3x_4^2m_3-22010x_2^2x_3x_4^2m_3 \\
&-22010x_1x_2^3x_4^2m_3-22010x_2x_3^2x_4^2m_3 \\
&-9094x_3^3x_4^2m_3-9094x_1^2x_4^3m_3 \\
&-16178x_1x_2x_4^3m_3-9094x_2^2x_4^3m_3-16178x_1x_3x_4^3m_3-16178x_2x_3x_4^3m_3 \\
&-9094x_2^3x_4^3m_3-5404x_1x_4^4m_3-5404x_2x_4^4m_3-5404x_3x_4^4m_3-1516x_4^5m_3 \\
&-5404x_1^4x_5m_3-16178x_1^3x_2x_5m_3-22010x_1^2x_2^2x_5m_3-16178x_1x_2^3x_5m_3-5404x_2^4x_5m_3 \\
&-16178x_1^3x_3x_5m_3-38946x_1^2x_2x_3x_5m_3-38946x_1x_2^2x_3x_5m_3-16178x_2^3x_3x_5m_3 \\
&-22010x_1^2x_3^2x_5m_3-38946x_1x_2x_3^2x_5m_3-22010x_2^2x_3^2x_5m_3-16178x_1x_3^3x_5m_3 \\
&-16178x_2x_3^3x_5m_3-5404x_3^4x_5m_3-16178x_1^3x_4x_5m_3-38946x_1^2x_2x_4x_5m_3 \\
&-38946x_1x_2^2x_4x_5m_3-16178x_2^3x_4x_5m_3-38946x_1^2x_3x_4x_5m_3-68700x_1x_2x_3x_4x_5m_3 \\
&-38946x_2^2x_3x_4x_5m_3-38946x_1x_2^3x_4x_5m_3-38946x_2x_3^2x_4x_5m_3-16178x_3^3x_4x_5m_3 \\
&-22010x_1^2x_4^2x_5m_3-38946x_1x_2x_4^2x_5m_3-22010x_2^2x_4^2x_5m_3-38946x_1x_3x_4^2x_5m_3 \\
&-38946x_2x_3x_4^2x_5m_3-22010x_3^2x_4^2x_5m_3-16178x_1x_4^3x_5m_3 \\
&-16178x_2x_4^3x_5m_3-16178x_3x_4^3x_5m_3 \\
&-5404x_4^4x_5m_3-9094x_1^3x_5^2m_3-22010x_1^2x_2x_5^2m_3-22010x_1x_2^2x_5^2m_3-9094x_2^3x_5^2m_3 \\
&-22010x_1^2x_3x_5^2m_3-38946x_1x_2x_3x_5^2m_3-22010x_2^2x_3x_5^2m_3-22010x_1x_3^2x_5^2m_3 \\
&-22010x_2x_2^2x_5^2m_3-9094x_3^3x_5^2m_3-22010x_1^2x_4x_5^2m_3-38946x_1x_2x_4x_5^2m_3 \\
&-22010x_2^2x_4x_5^2m_3-38946x_1x_3x_4x_5^2m_3-38946x_2x_3x_4x_5^2m_3-22010x_3^2x_4x_5^2m_3 \\
&-22010x_1x_4^2x_5^2m_3-22010x_2x_4^2x_5^2m_3-22010x_3x_4^2x_5^2m_3-9094x_4^3x_5^2m_3 \\
&-9094x_1^2x_5^3m_3-16178x_1x_2x_5^3m_3-9094x_2^2x_5^3m_3-16178x_1x_3x_5^3m_3-16178x_2x_3x_5^3m_3 \\
&-9094x_2^3x_5^3m_3-16178x_1x_4x_5^3m_3-16178x_2x_4x_5^3m_3-16178x_3x_4x_5^3m_3-9094x_4^2x_5^3m_3 \\
&-5404x_1x_5^4m_3-5404x_2x_5^4m_3-5404x_3x_5^4m_3-5404x_4x_5^4m_3-1516x_5^5m_3+3450x_1^4m_1m_3 \\
&+10664x_1^3x_2m_1m_3+14674x_1^2x_2^2m_1m_3+10664x_1x_2^3m_1m_3+3450x_2^4m_1m_3+10664x_1^3x_3m_1m_3 \\
&+26298x_1^2x_2x_3m_1m_3+26298x_1x_2^2x_3m_1m_3+10664x_2^3x_3m_1m_3+14674x_1^2x_3^2m_1m_3 \\
&+26298x_1x_2x_3^2m_1m_3+14674x_2^2x_3^2m_1m_3+10664x_1x_3^3m_1m_3+10664x_2x_3^3m_1m_3
\end{aligned}$$

$$\begin{aligned}
&+3450x_1^4m_1m_3+10664x_1^3x_4m_1m_3+26298x_1^2x_2x_4m_1m_3+26298x_1x_2^2x_4m_1m_3 \\
&+10664x_2^3x_4m_1m_3+26298x_1^2x_3x_4m_1m_3+47004x_1x_2x_3x_4m_1m_3+26298x_2^2x_3x_4m_1m_3 \\
&+26298x_1x_2^3x_4m_1m_3+26298x_2x_2^2x_4m_1m_3+10664x_3^3x_4m_1m_3+14674x_1^2x_4^2m_1m_3 \\
&+26298x_1x_2x_4^2m_1m_3+14674x_2^2x_4^2m_1m_3+26298x_1x_3x_4^2m_1m_3+26298x_2x_3x_4^2m_1m_3 \\
&+14674x_3^2x_4^2m_1m_3+10664x_1x_4^3m_1m_3+10664x_2x_4^3m_1m_3+10664x_3x_4^3m_1m_3 \\
&+3450x_4^4m_1m_3+10664x_1^3x_5m_1m_3+26298x_1^2x_2x_5m_1m_3+26298x_1x_2^2x_5m_1m_3 \\
&+10664x_2^3x_5m_1m_3+26298x_1^2x_3x_5m_1m_3+47004x_1x_2x_3x_5m_1m_3+26298x_2^2x_3x_5m_1m_3 \\
&+26298x_1x_2^3x_5m_1m_3+26298x_2x_2^2x_5m_1m_3+10664x_3^3x_5m_1m_3 \\
&+26298x_1^2x_4x_5m_1m_3+47004x_1x_2x_4x_5m_1m_3+26298x_2^2x_4x_5m_1m_3+47004x_1x_3x_4x_5m_1m_3 \\
&+47004x_2x_3x_4x_5m_1m_3+26298x_3^2x_4x_5m_1m_3+26298x_1x_4^2x_5m_1m_3 \\
&+26298x_2x_4^2x_5m_1m_3+26298x_3x_4^2x_5m_1m_3 \\
&+10664x_4^3x_5m_1m_3+14674x_1^2x_5^2m_1m_3+26298x_1x_2x_5^2m_1m_3 \\
&+14674x_2^2x_5^2m_1m_3+26298x_1x_3x_5^2m_1m_3+26298x_2x_3x_5^2m_1m_3 \\
&+14674x_3^2x_5^2m_1m_3+26298x_1x_4x_5^2m_1m_3+26298x_2x_4x_5^2m_1m_3+26298x_3x_4x_5^2m_1m_3 \\
&+14674x_4^2x_5^2m_1m_3+10664x_1x_5^3m_1m_3+10664x_2x_5^3m_1m_3 \\
&+10664x_3x_5^3m_1m_3+10664x_4x_5^3m_1m_3 \\
&+3450x_5^4m_1m_3-2663x_1^3m_1^2m_3-6694x_1^2x_2m_1^2m_3-6694x_1x_2^2m_1^2m_3 \\
&-2663x_2^3m_1^2m_3-6694x_1^2x_3m_1^2m_3 \\
&-12093x_1x_2x_3m_1^2m_3-6694x_2^2x_3m_1^2m_3-6694x_1x_3^2m_1^2m_3 \\
&-6694x_2x_3^2m_1^2m_3-2663x_3^3m_1^2m_3 \\
&-6694x_1^2x_4m_1^2m_3-12093x_1x_2x_4m_1^2m_3-6694x_2^2x_4m_1^2m_3- \\
&12093x_1x_3x_4m_1^2m_3-12093x_2x_3x_4m_1^2m_3 \\
&-6694x_3^2x_4m_1^2m_3-6694x_1x_4^2m_1^2m_3-6694x_2x_4^2m_1^2m_3 \\
&-6694x_3x_4^2m_1^2m_3-2663x_4^3m_1^2m_3-6694x_1^2x_5m_1^2m_3-12093x_1x_2x_5m_1^2m_3 \\
&-6694x_2^2x_5m_1^2m_3-12093x_1x_3x_5m_1^2m_3-12093x_2x_3x_5m_1^2m_3 \\
&-6694x_3^2x_5m_1^2m_3-12093x_1x_4x_5m_1^2m_3-12093x_2x_4x_5m_1^2m_3-12093x_3x_4x_5m_1^2m_3-6694x_4^2x_5m_1^2m_3 \\
&-6694x_1x_5^2m_1^2m_3-6694x_2x_5^2m_1^2m_3-6694x_3x_5^2m_1^2m_3 \\
&-6694x_4x_5^2m_1^2m_3-2663x_5^3m_1^2m_3 \\
&+798x_1^2m_1^3m_3+1458x_1x_2m_1^3m_3+798x_2^2m_1^3m_3+1458x_1x_3m_1^3m_3 \\
&+1458x_2x_3m_1^3m_3+798x_3^2m_1^3m_3+1458x_1x_4m_1^3m_3+1458x_2x_4m_1^3m_3+1458x_3x_4m_1^3m_3 \\
&+798x_4^2m_1^3m_3+1458x_1x_5m_1^3m_3+1458x_2x_5m_1^3m_3+1458x_3x_5m_1^3m_3 \\
&+1458x_4x_5m_1^3m_3+798x_5^2m_1^3m_3-72x_1m_1^4m_3-72x_2m_1^4m_3 \\
&-72x_3m_1^4m_3-72x_4m_1^4m_3-72x_5m_1^4m_3 \\
&+3450x_1^4m_2m_3+10664x_1^3x_2m_2m_3+14674x_1^2x_2^2m_2m_3+10664x_1x_2^3m_2m_3+3450x_2^4m_2m_3 \\
&+10664x_3^3x_2m_2m_3+26298x_1^2x_2x_3m_2m_3+26298x_1x_2^2x_3m_2m_3 \\
&+10664x_2^3x_3m_2m_3+14674x_1^2x_3^2m_2m_3+26298x_1x_2x_3^2m_2m_3+14674x_2^2x_3^2m_2m_3 \\
&+10664x_1x_3^3m_2m_3+10664x_2x_3^3m_2m_3+3450x_4^4m_2m_3+10664x_1^3x_4m_2m_3 \\
&+26298x_1^2x_2x_4m_2m_3+26298x_1x_2^2x_4m_2m_3+10664x_2^3x_4m_2m_3+26298x_1^2x_3x_4m_2m_3 \\
&+47004x_1x_2x_3x_4m_2m_3+26298x_2^2x_3x_4m_2m_3+26298x_1x_3^2x_4m_2m_3 \\
&+26298x_2x_3^2x_4m_2m_3+10664x_3^3x_4m_2m_3 \\
&+14674x_1^2x_4^2m_2m_3+26298x_1x_2x_4^2m_2m_3+14674x_2^2x_4^2m_2m_3
\end{aligned}$$

$$\begin{aligned}
&+26298x_1x_3x_4^2m_2m_3+26298x_2x_3x_4^2m_2m_3 \\
&+14674x_3^2x_4^2m_2m_3+10664x_1x_4^3m_2m_3+10664x_2x_4^3m_2m_3 \\
&+10664x_3x_4^3m_2m_3+3450x_4^4m_2m_3 \\
&+10664x_1^3x_5m_2m_3+26298x_1^2x_2x_5m_2m_3+26298x_1x_2^2x_5m_2m_3 \\
&+10664x_2^2x_5m_2m_3+26298x_1^2x_3x_5m_2m_3 \\
&+47004x_1x_2x_3x_5m_2m_3+26298x_2^2x_3x_5m_2m_3+26298x_1x_3^2x_5m_2m_3 \\
&+26298x_2x_3^2x_5m_2m_3+10664x_3^3x_5m_2m_3 \\
&+26298x_1^2x_4x_5m_2m_3+47004x_1x_2x_4x_5m_2m_3+26298x_2^2x_4x_5m_2m_3+47004x_1x_3x_4x_5m_2m_3 \\
&+47004x_2x_3x_4x_5m_2m_3+26298x_3^2x_4x_5m_2m_3 \\
&+26298x_1x_4^2x_5m_2m_3+26298x_2x_4^2x_5m_2m_3 \\
&+26298x_3x_4^2x_5m_2m_3+10664x_4^3x_5m_2m_3+14674x_1^2x_5^2m_2m_3+26298x_1x_2x_5^2m_2m_3 \\
&+14674x_2^2x_5^2m_2m_3+26298x_1x_3x_5^2m_2m_3+26298x_2x_3x_5^2m_2m_3+14674x_3^2x_5^2m_2m_3 \\
&+26298x_1x_4x_5^2m_2m_3+26298x_2x_4x_5^2m_2m_3+26298x_3x_4x_5^2m_2m_3+14674x_4^2x_5^2m_2m_3 \\
&+10664x_1x_5^3m_2m_3+10664x_2x_5^3m_2m_3+10664x_3x_5^3m_2m_3+10664x_4x_5^3m_2m_3 \\
&+3450x_5^4m_2m_3-6912x_1^3m_1m_2m_3-17390x_1^2x_2m_1m_2m_3-17390x_1x_2^2m_1m_2m_3 \\
&-6912x_2^2m_1m_2m_3-17390x_1^2x_3m_1m_2m_3-31434x_1x_2x_3m_1m_2m_3-17390x_2^2x_3m_1m_2m_3 \\
&-17390x_1x_3^2m_1m_2m_3-17390x_2x_3^2m_1m_2m_3-6912x_3^3m_1m_2m_3 \\
&-17390x_1^2x_4m_1m_2m_3-31434x_1x_2x_4m_1m_2m_3-17390x_2^2x_4m_1m_2m_3-31434x_1x_3x_4m_1m_2m_3 \\
&-31434x_2x_3x_4m_1m_2m_3-17390x_3^2x_4m_1m_2m_3-17390x_1x_4^2m_1m_2m_3-17390x_2x_4^2m_1m_2m_3 \\
&-17390x_3x_4^2m_1m_2m_3-6912x_4^3m_1m_2m_3-17390x_1^2x_5m_1m_2m_3-31434x_1x_2x_5m_1m_2m_3 \\
&-17390x_2^2x_5m_1m_2m_3-31434x_1x_3x_5m_1m_2m_3-31434x_2x_3x_5m_1m_2m_3 \\
&-17390x_3^2x_5m_1m_2m_3-31434x_1x_4x_5m_1m_2m_3-31434x_2x_4x_5m_1m_2m_3 \\
&-31434x_3x_4x_5m_1m_2m_3-17390x_4^2x_5m_1m_2m_3-17390x_1x_5^2m_1m_2m_3 \\
&-17390x_2x_5^2m_1m_2m_3-17390x_3x_5^2m_1m_2m_3 \\
&-17390x_4x_5^2m_1m_2m_3-6912x_5^3m_1m_2m_3+4452x_1^2m_1^2m_2m_3+8122x_1x_2m_1^2m_2m_3 \\
&+4452x_2^2m_1^2m_2m_3+8122x_1x_3m_1^2m_2m_3+8122x_2x_3m_1^2m_2m_3+4452x_3^2m_1^2m_2m_3 \\
&+8122x_1x_4m_1^2m_2m_3+8122x_2x_4m_1^2m_2m_3+8122x_3x_4m_1^2m_2m_3+4452x_4^2m_1^2m_2m_3 \\
&+8122x_1x_5m_1^2m_2m_3+8122x_2x_5m_1^2m_2m_3+8122x_3x_5m_1^2m_2m_3+8122x_4x_5m_1^2m_2m_3 \\
&+4452x_5^2m_1^2m_2m_3-1002x_1m_1^3m_2m_3-1002x_2m_1^3m_2m_3-1002x_3m_1^3m_2m_3 \\
&-1002x_4m_1^3m_2m_3-1002x_5m_1^3m_2m_3+51m_4^4m_2m_3-2663x_1^3m_2^2m_3-6694x_1^2x_2m_2^2m_3 \\
&-6694x_1x_2^2m_2^2m_3-2663x_2^3m_2^2m_3-6694x_1^2x_3m_2^2m_3-12093x_1x_2x_3m_2^2m_3 \\
&-6694x_2^2x_3m_2^2m_3-6694x_1x_3^2m_2^2m_3-6694x_2x_3^2m_2^2m_3-2663x_3^3m_2^2m_3 \\
&-6694x_1^2x_4m_2^2m_3-12093x_1x_2x_4m_2^2m_3-6694x_2^2x_4m_2^2m_3-12093x_1x_3x_4m_2^2m_3 \\
&-12093x_2x_3x_4m_2^2m_3-6694x_3^2x_4m_2^2m_3-6694x_1x_4^2m_2^2m_3-6694x_2x_4^2m_2^2m_3 \\
&-6694x_3x_4^2m_2^2m_3-2663x_4^3m_2^2m_3-6694x_1^2x_5m_2^2m_3-12093x_1x_2x_5m_2^2m_3 \\
&-6694x_2^2x_5m_2^2m_3-12093x_1x_3x_5m_2^2m_3-12093x_2x_3x_5m_2^2m_3 \\
&-6694x_3^2x_5m_2^2m_3-12093x_1x_4x_5m_2^2m_3-12093x_2x_4x_5m_2^2m_3-12093x_3x_4x_5m_2^2m_3 \\
&-6694x_4^2x_5m_2^2m_3-6694x_1x_5^2m_2^2m_3-6694x_2x_5^2m_2^2m_3-6694x_3x_5^2m_2^2m_3 \\
&-6694x_4x_5^2m_2^2m_3-2663x_5^3m_2^2m_3+4452x_1^2m_1m_2^2m_3+8122x_1x_2m_1m_2^2m_3 \\
&+4452x_2^2m_1m_2^2m_3+8122x_1x_3m_1m_2^2m_3+8122x_2x_3m_1m_2^2m_3 \\
&+4452x_3^2m_1m_2^2m_3+8122x_1x_4m_1m_2^2m_3+8122x_2x_4m_1m_2^2m_3+8122x_3x_4m_1m_2^2m_3
\end{aligned}$$

$$\begin{aligned}
&+4452x_4^2m_1m_2^2m_3+8122x_1x_5m_1m_2^2m_3+8122x_2x_5m_1m_2^2m_3+8122x_3x_5m_1m_2^2m_3 \\
&+8122x_4x_5m_1m_2^2m_3+4452x_5^2m_1m_2^2m_3-2158x_1m_1^2m_2^2m_3 \\
&-2158x_2m_1^2m_2^2m_3-2158x_3m_1^2m_2^2m_3-2158x_4m_1^2m_2^2m_3 \\
&-2158x_5m_1^2m_2^2m_3+279m_1^3m_2^2m_3+798x_1^2m_2^3m_3+1458x_1x_2m_2^3m_3+798x_2^2m_2^3m_3 \\
&+1458x_1x_3m_2^3m_3+1458x_2x_3m_2^3m_3+798x_3^2m_2^3m_3+1458x_1x_4m_2^3m_3+1458x_2x_4m_2^3m_3 \\
&+1458x_3x_4m_2^3m_3+798x_4^2m_2^3m_3+1458x_1x_5m_2^3m_3+1458x_2x_5m_2^3m_3 \\
&+1458x_3x_5m_2^3m_3+1458x_4x_5m_2^3m_3 \\
&+798x_5^2m_2^3m_3-1002x_1m_1m_2^3m_3-1002x_2m_1m_2^3m_3-1002x_3m_1m_2^3m_3 \\
&-1002x_4m_1m_2^3m_3-1002x_5m_1m_2^3m_3 \\
&+279m_1^4m_2^3m_3-72x_1m_2^4m_3-72x_2m_2^4m_3-72x_3m_2^4m_3-72x_4m_2^4m_3-72x_5m_2^4m_3 \\
&+51m_1m_2^4m_3+1305x_1^4m_3^2+4020x_1^3x_2m_3^2+5523x_1^2x_2^2m_3^2+4020x_1x_2^3m_3^2 \\
&+1305x_2^4m_3^2+4020x_1^3x_3m_3^2+9883x_1^2x_2x_3m_3^2+9883x_1x_2^2x_3m_3^2+4020x_2^3x_3m_3^2 \\
&+5523x_1^2x_3^2m_3^2+9883x_1x_2x_3^2m_3^2+5523x_2^2x_3^2m_3^2+4020x_1x_3^3m_3^2+4020x_2x_3^3m_3^2 \\
&+1305x_3^4m_3^2+4020x_1^3x_4m_3^2 \\
&+9883x_1^2x_2x_4m_3^2+9883x_1x_2^2x_4m_3^2+4020x_2^3x_4m_3^2+9883x_1^2x_3x_4m_3^2 \\
&+17634x_1x_2x_3x_4m_3^2+9883x_2^2x_3x_4m_3^2+9883x_1x_3^2x_4m_3^2+9883x_2x_3^2x_4m_3^2 \\
&+4020x_3^3x_4m_3^2+5523x_1^2x_4^2m_3^2+9883x_1x_2x_4^2m_3^2 \\
&+5523x_2^2x_4^2m_3^2+9883x_1x_3x_4^2m_3^2+9883x_2x_3x_4^2m_3^2+5523x_3^2x_4^2m_3^2 \\
&+4020x_1x_4^3m_3^2+4020x_2x_4^3m_3^2+4020x_3x_4^3m_3^2+1305x_4^4m_3^2+4020x_1^3x_5m_3^2 \\
&+9883x_1^2x_2x_5m_3^2+9883x_1x_2^2x_5m_3^2 \\
&+4020x_2^3x_5m_3^2+9883x_1^2x_3x_5m_3^2+17634x_1x_2x_3x_5m_3^2+9883x_2^2x_3x_5m_3^2 \\
&+9883x_1x_3^2x_5m_3^2+9883x_2x_3^2x_5m_3^2+4020x_3^3x_5m_3^2+9883x_1^2x_4x_5m_3^2 \\
&+17634x_1x_2x_4x_5m_3^2+9883x_2^2x_4x_5m_3^2+17634x_1x_3x_4x_5m_3^2+17634x_2x_3x_4x_5m_3^2 \\
&+9883x_3^2x_4x_5m_3^2+9883x_1x_4^2x_5m_3^2+9883x_2x_4^2x_5m_3^2+9883x_3x_4^2x_5m_3^2 \\
&+4020x_4^3x_5m_3^2+5523x_1^2x_5^2m_3^2+9883x_1x_2x_5^2m_3^2+5523x_2^2x_5^2m_3^2 \\
&+9883x_1x_3x_5^2m_3^2+9883x_2x_3x_5^2m_3^2+5523x_3^2x_5^2m_3^2+9883x_1x_4x_5^2m_3^2 \\
&+9883x_2x_4x_5^2m_3^2+9883x_3x_4x_5^2m_3^2+5523x_4^2x_5^2m_3^2 \\
&+4020x_1x_5^3m_3^2+4020x_2x_5^3m_3^2+4020x_3x_5^3m_3^2+4020x_4x_5^3m_3^2+1305x_5^4m_3^2 \\
&-2663x_1^3m_1m_2^3-6694x_1^2x_2m_1m_2^3-6694x_1x_2^2m_1m_2^3-2663x_2^3m_1m_2^3 \\
&-6694x_1^2x_3m_1m_2^3-12093x_1x_2x_3m_1m_2^3 \\
&-6694x_2^2x_3m_1m_2^3-6694x_1x_3^2m_1m_2^3-6694x_2x_3^2m_1m_2^3-2663x_3^3m_1m_2^3 \\
&-6694x_1^2x_4m_1m_2^3-12093x_1x_2x_4m_1m_2^3-6694x_2^2x_4m_1m_2^3-12093x_1x_3x_4m_1m_2^3 \\
&-12093x_2x_3x_4m_1m_2^3-6694x_3^2x_4m_1m_2^3-6694x_1x_4^2m_1m_2^3-6694x_2x_4^2m_1m_2^3 \\
&-6694x_3x_4^2m_1m_2^3-2663x_4^3m_1m_2^3-6694x_1^2x_5m_1m_2^3 \\
&-12093x_1x_2x_5m_1m_2^3-6694x_2^2x_5m_1m_2^3-12093x_1x_3x_5m_1m_2^3-12093x_2x_3x_5m_1m_2^3 \\
&-6694x_3^2x_5m_1m_2^3-12093x_1x_4x_5m_1m_2^3-12093x_2x_4x_5m_1m_2^3-12093x_3x_4x_5m_1m_2^3 \\
&-6694x_4^2x_5m_1m_2^3-6694x_1x_5^2m_1m_2^3-6694x_2x_5^2m_1m_2^3 \\
&-6694x_3x_5^2m_1m_2^3-6694x_4x_5^2m_1m_2^3 \\
&-2663x_5^3m_1m_2^3+1748x_1^2m_1^2m_2^3+3190x_1x_2m_1^2m_2^3+1748x_2^2m_1^2m_2^3 \\
&+3190x_1x_3m_1^2m_2^3+3190x_2x_3m_1^2m_2^3+1748x_3^2m_1^2m_2^3+3190x_1x_4m_1^2m_2^3 \\
&+3190x_2x_4m_1^2m_2^3+3190x_3x_4m_1^2m_2^3+1748x_4^2m_1^2m_2^3+3190x_1x_5m_1^2m_2^3
\end{aligned}$$

$$\begin{aligned}
&+3190x_2x_5m_1^2m_3^2+3190x_3x_5m_1^2m_3^2+3190x_4x_5m_1^2m_3^2+1748x_5^2m_1^2m_3^2 \\
&-402x_1m_1^3m_3^2-402x_2m_1^3m_3^2-402x_3m_1^3m_3^2-402x_4m_1^3m_3^2-402x_5m_1^3m_3^2 \\
&+21m_1^4m_3^2-2663x_1^3m_2m_3^2-6694x_1^2x_2m_2m_3^2-6694x_1x_2^2m_2m_3^2-2663x_2^3m_2m_3^2 \\
&-6694x_1^3x_3m_2m_3^2-12093x_1x_2x_3m_2m_3^2-6694x_2^2x_3m_2m_3^2-6694x_1x_3^2m_2m_3^2 \\
&-6694x_2x_3^2m_2m_3^2-2663x_3^3m_2m_3^2-6694x_1^2x_4m_2m_3^2-12093x_1x_2x_4m_2m_3^2 \\
&-6694x_2^2x_4m_2m_3^2-12093x_1x_3x_4m_2m_3^2-12093x_2x_3x_4m_2m_3^2-6694x_3^2x_4m_2m_3^2 \\
&-6694x_1x_4^2m_2m_3^2-6694x_2x_4^2m_2m_3^2-6694x_3x_4^2m_2m_3^2-2663x_4^3m_2m_3^2 \\
&-6694x_1^2x_5m_2m_3^2-12093x_1x_2x_5m_2m_3^2-6694x_2^2x_5m_2m_3^2-12093x_1x_3x_5m_2m_3^2 \\
&-12093x_2x_3x_5m_2m_3^2-6694x_3^2x_5m_2m_3^2-12093x_1x_4x_5m_2m_3^2-12093x_2x_4x_5m_2m_3^2 \\
&-12093x_3x_4x_5m_2m_3^2-6694x_4^2x_5m_2m_3^2-6694x_1x_5^2m_2m_3^2-6694x_2x_5^2m_2m_3^2 \\
&-6694x_3x_5^2m_2m_3^2-6694x_4x_5^2m_2m_3^2-2663x_5^3m_2m_3^2+4452x_1^2m_1m_2m_3^2 \\
&+8122x_1x_2m_1m_2m_3^2+4452x_2^2m_1m_2m_3^2+8122x_1x_3m_1m_2m_3^2+8122x_2x_3m_1m_2m_3^2 \\
&+4452x_3^2m_1m_2m_3^2+8122x_1x_4m_1m_2m_3^2+8122x_2x_4m_1m_2m_3^2+8122x_3x_4m_1m_2m_3^2 \\
&+4452x_4^2m_1m_2m_3^2+8122x_1x_5m_1m_2m_3^2+8122x_2x_5m_1m_2m_3^2+8122x_3x_5m_1m_2m_3^2 \\
&+8122x_4x_5m_1m_2m_3^2+4452x_5^2m_1m_2m_3^2-2158x_1m_1^2m_2m_3^2-2158x_2m_1^2m_2m_3^2 \\
&-2158x_3m_1^2m_2m_3^2-2158x_4m_1^2m_2m_3^2-2158x_5m_1^2m_2m_3^2+279m_1^3m_2m_3^2 \\
&+1748x_1^2m_2^2m_3^2+3190x_1x_2m_2^2m_3^2+1748x_2^2m_2^2m_3^2+3190x_1x_3m_2^2m_3^2 \\
&+3190x_2x_3m_2^2m_3^2+1748x_3^2m_2^2m_3^2+3190x_1x_4m_2^2m_3^2+3190x_2x_4m_2^2m_3^2 \\
&+3190x_3x_4m_2^2m_3^2+1748x_4^2m_2^2m_3^2+3190x_1x_5m_2^2m_3^2+3190x_2x_5m_2^2m_3^2 \\
&+3190x_3x_5m_2^2m_3^2+3190x_4x_5m_2^2m_3^2+1748x_5^2m_2^2m_3^2-2158x_1m_1m_2^2m_3^2 \\
&-2158x_2m_1m_2^2m_3^2-2158x_3m_1m_2^2m_3^2-2158x_4m_1m_2^2m_3^2-2158x_5m_1m_2^2m_3^2 \\
&+593m_1^2m_2^2m_3^2-402x_1m_3^2m_3^2-402x_2m_3^2m_3^2-402x_3m_3^2m_3^2-402x_4m_3^2m_3^2 \\
&-402x_5m_3^2m_3^2+279m_1m_3^2m_3^2+21m_2^4m_3^2-459x_1^3m_3^3-1152x_1^2x_2m_3^3 \\
&-1152x_1x_2^2m_3^3-459x_2^3m_3^3-1152x_1^2x_3m_3^3-2079x_1x_2x_3m_3^3-1152x_2^2x_3m_3^3 \\
&-1152x_1x_3^2m_3^3-1152x_2x_3^2m_3^3-459x_3^3m_3^3-1152x_1^2x_4m_3^3-2079x_1x_2x_4m_3^3 \\
&-1152x_2^2x_4m_3^3-2079x_1x_3x_4m_3^3-2079x_2x_3x_4m_3^3 \\
&-1152x_3^2x_4m_3^3-1152x_1x_4^2m_3^3-1152x_2x_4^2m_3^3 \\
&-1152x_3x_4^2m_3^3-459x_4^3m_3^3-1152x_1^2x_5m_3^3-2079x_1x_2x_5m_3^3-1152x_2^2x_5m_3^3 \\
&-2079x_1x_3x_5m_3^3-2079x_2x_3x_5m_3^3-1152x_3^2x_5m_3^3-2079x_1x_4x_5m_3^3-2079x_2x_4x_5m_3^3 \\
&-2079x_3x_4x_5m_3^3-1152x_4^2x_5m_3^3-1152x_1x_5^2m_3^3-1152x_2x_5^2m_3^3-1152x_3x_5^2m_3^3 \\
&-1152x_4x_5^2m_3^3-459x_5^3m_3^3 \\
&+798x_1^2m_1m_3^3+1458x_1x_2m_1m_3^3+798x_2^2m_1m_3^3+1458x_1x_3m_1m_3^3+1458x_2x_3m_1m_3^3 \\
&+798x_3^2m_1m_3^3+1458x_1x_4m_1m_3^3+1458x_2x_4m_1m_3^3+1458x_3x_4m_1m_3^3 \\
&+798x_4^2m_1m_3^3+1458x_1x_5m_1m_3^3+1458x_2x_5m_1m_3^3+1458x_3x_5m_1m_3^3 \\
&+1458x_4x_5m_1m_3^3+798x_5^2m_1m_3^3 \\
&-402x_1m_1^2m_3^3-402x_2m_1^2m_3^3-402x_3m_1^2m_3^3-402x_4m_1^2m_3^3-402x_5m_1^2m_3^3 \\
&+54m_1^3m_3^3+798x_1^2m_2m_3^3+1458x_1x_2m_2m_3^3+798x_2^2m_2m_3^3+1458x_1x_3m_2m_3^3 \\
&+1458x_2x_3m_2m_3^3+798x_3^2m_2m_3^3+1458x_1x_4m_2m_3^3+1458x_2x_4m_2m_3^3+1458x_3x_4m_2m_3^3 \\
&+798x_4^2m_2m_3^3+1458x_1x_5m_2m_3^3+1458x_2x_5m_2m_3^3 \\
&+1458x_3x_5m_2m_3^3+1458x_4x_5m_2m_3^3+798x_5^2m_2m_3^3 \\
&-1002x_1m_1m_2m_3^3-1002x_2m_1m_2m_3^3-1002x_3m_1m_2m_3^3-1002x_4m_1m_2m_3^3
\end{aligned}$$

$$\begin{aligned}
& -1002x_5m_1m_2m_3^3+279m_1^2m_2m_3^3-402x_1m_2^2m_3^3-402x_2m_2^2m_3^3-402x_3m_2^2m_3^3 \\
& -402x_4m_2^2m_3^3-402x_5m_2^2m_3^3+279m_1m_2^2m_3^3+54m_2^3m_3^3+54x_1^2m_3^4+99x_1x_2m_3^4 \\
& +54x_2^2m_3^4+99x_1x_3m_3^4+99x_2x_3m_3^4+54x_3^2m_3^4+99x_1x_4m_3^4 \\
& +99x_2x_4m_3^4+99x_3x_4m_3^4+54x_4^2m_3^4 \\
& +99x_1x_5m_3^4+99x_2x_5m_3^4+99x_3x_5m_3^4+99x_4x_5m_3^4+54x_5^2m_3^4-72x_1m_1m_3^4 \\
& -72x_2m_1m_3^4-72x_3m_1m_3^4-72x_4m_1m_3^4-72x_5m_1m_3^4+21m_1^2m_3^4-72x_1m_2m_3^4 \\
& -72x_2m_2m_3^4-72x_3m_2m_3^4-72x_4m_2m_3^4-72x_5m_2m_3^4 \\
& +51m_1m_2m_3^4+21m_2^2m_3^4-1516x_1^5m_4-5404x_1^4x_2m_4-9094x_1^3x_2^2m_4-9094x_1^2x_2^3m_4 \\
& -5404x_1x_2^4m_4-1516x_2^5m_4-5404x_1^4x_3m_4-16178x_1^3x_2x_3m_4-22010x_1^2x_2^2x_3m_4 \\
& -16178x_1x_2^3x_3m_4-5404x_2^4x_3m_4-9094x_1^3x_2^3m_4-22010x_1^2x_2x_2^3m_4-22010x_1x_2^2x_2^3m_4 \\
& -9094x_2^3x_2^3m_4-9094x_1^2x_3^3m_4-16178x_1x_2x_2^3m_4-9094x_2^2x_3^3m_4-5404x_1x_3^4m_4 \\
& -5404x_2x_3^4m_4-1516x_3^5m_4-5404x_1^4x_4m_4-16178x_1^3x_2x_4m_4-22010x_1^2x_2^2x_4m_4 \\
& -16178x_1x_2^3x_4m_4-5404x_2^4x_4m_4-16178x_1^3x_3x_4m_4 \\
& -38946x_1^2x_2x_3x_4m_4-38946x_1x_2^2x_3x_4m_4-16178x_2^3x_3x_4m_4-22010x_1^2x_3^2x_4m_4 \\
& -38946x_1x_2x_3^2x_4m_4-22010x_2^2x_3^2x_4m_4-16178x_1x_3^3x_4m_4 \\
& -16178x_2x_3^3x_4m_4-5404x_3^4x_4m_4 \\
& -9094x_1^3x_4^2m_4-22010x_1^2x_2x_4^2m_4-22010x_1x_2^2x_4^2m_4-9094x_2^3x_4^2m_4 \\
& -22010x_1^2x_3x_4^2m_4-38946x_1x_2x_3x_4^2m_4-22010x_2^2x_3x_4^2m_4-22010x_1x_3^2x_4^2m_4 \\
& -22010x_2x_3^2x_4^2m_4-9094x_3^3x_4^2m_4 \\
& -9094x_1^2x_4^3m_4-16178x_1x_2x_4^3m_4-9094x_2^2x_4^3m_4-16178x_1x_3x_4^3m_4-16178x_2x_3x_4^3m_4 \\
& -9094x_3^2x_4^3m_4-5404x_1x_4^4m_4-5404x_2x_4^4m_4-5404x_3x_4^4m_4 \\
& -1516x_4^5m_4-5404x_1^4x_5m_4-16178x_1^3x_2x_5m_4 \\
& -22010x_1^2x_2^2x_5m_4-16178x_1x_2^3x_5m_4-5404x_2^4x_5m_4-16178x_1^3x_3x_5m_4 \\
& -38946x_1^2x_2x_3x_5m_4-38946x_1x_2^2x_3x_5m_4-16178x_2^3x_3x_5m_4-22010x_1^2x_3^2x_5m_4 \\
& -38946x_1x_2x_3^2x_5m_4-22010x_2^2x_3^2x_5m_4-16178x_1x_3^3x_5m_4-16178x_2x_3^3x_5m_4 \\
& -5404x_3^4x_5m_4-16178x_1^3x_4x_5m_4-38946x_1^2x_2x_4x_5m_4-38946x_1x_2^2x_4x_5m_4 \\
& -16178x_2^3x_4x_5m_4-38946x_1^2x_3x_4x_5m_4-68700x_1x_2x_3x_4x_5m_4-38946x_2^2x_3x_4x_5m_4 \\
& -38946x_1x_2^2x_4x_5m_4-38946x_2x_2^2x_4x_5m_4-16178x_3^3x_4x_5m_4-22010x_1^2x_4^2x_5m_4 \\
& -38946x_1x_2x_4^2x_5m_4-22010x_2^2x_4^2x_5m_4-38946x_1x_3x_4^2x_5m_4-38946x_2x_3x_4^2x_5m_4 \\
& -22010x_3^2x_4^2x_5m_4-16178x_1x_4^3x_5m_4-16178x_2x_4^3x_5m_4-16178x_3x_4^3x_5m_4 \\
& -5404x_4^4x_5m_4-9094x_1^3x_5^2m_4-22010x_1^2x_2x_5^2m_4 \\
& -22010x_1x_2^2x_5^2m_4-9094x_2^3x_5^2m_4-22010x_1^2x_3x_5^2m_4 \\
& -38946x_1x_2x_3x_5^2m_4-22010x_2^2x_3x_5^2m_4-22010x_1x_3^2x_5^2m_4-22010x_2x_2^2x_5^2m_4 \\
& -9094x_3^3x_5^2m_4-22010x_1^2x_4x_5^2m_4-38946x_1x_2x_4x_5^2m_4-22010x_2^2x_4x_5^2m_4 \\
& -38946x_1x_3x_4x_5^2m_4-38946x_2x_3x_4x_5^2m_4-22010x_3^2x_4x_5^2m_4-22010x_1x_4^2x_5^2m_4 \\
& -22010x_2x_2^2x_5^2m_4-22010x_3x_4^2x_5^2m_4-9094x_4^3x_5^2m_4-9094x_1^2x_5^3m_4 \\
& -16178x_1x_2x_5^3m_4-9094x_2^2x_5^3m_4-16178x_1x_3x_5^3m_4 \\
& -16178x_2x_3x_5^3m_4-9094x_3^2x_5^3m_4-16178x_1x_4x_5^3m_4 \\
& -16178x_2x_4x_5^3m_4-16178x_3x_4x_5^3m_4-9094x_4^2x_5^3m_4 \\
& -5404x_1x_5^4m_4-5404x_2x_5^4m_4-5404x_3x_5^4m_4-5404x_4x_5^4m_4-1516x_5^5m_4+3450x_1^4m_1m_4 \\
& +10664x_1^3x_2m_1m_4+14674x_1^2x_2^2m_1m_4+10664x_1x_2^3m_1m_4+3450x_2^4m_1m_4
\end{aligned}$$

$$\begin{aligned}
&+10664x_1^3x_3m_1m_4+26298x_1^2x_2x_3m_1m_4+26298x_1x_2^2x_3m_1m_4+10664x_2^3x_3m_1m_4 \\
&+14674x_1^2x_3^2m_1m_4+26298x_1x_2x_3^2m_1m_4+14674x_2^2x_3^2m_1m_4+10664x_1x_3^3m_1m_4 \\
&+10664x_2x_3^3m_1m_4+3450x_3^4m_1m_4+10664x_1^3x_4m_1m_4+26298x_1^2x_2x_4m_1m_4 \\
&+26298x_1x_2^2x_4m_1m_4+10664x_2^3x_4m_1m_4+26298x_1^2x_3x_4m_1m_4+47004x_1x_2x_3x_4m_1m_4 \\
&+26298x_2^2x_3x_4m_1m_4+26298x_1x_3^2x_4m_1m_4+26298x_2x_3^2x_4m_1m_4+10664x_3^3x_4m_1m_4 \\
&+14674x_1^2x_4^2m_1m_4+26298x_1x_2x_4^2m_1m_4+14674x_2^2x_4^2m_1m_4 \\
&+26298x_1x_3x_4^2m_1m_4+26298x_2x_3x_4^2m_1m_4+14674x_3^2x_4^2m_1m_4+10664x_1x_4^3m_1m_4 \\
&+10664x_2x_4^3m_1m_4+10664x_3x_4^3m_1m_4+3450x_4^4m_1m_4+10664x_1^3x_5m_1m_4 \\
&+26298x_1^2x_2x_5m_1m_4+26298x_1x_2^2x_5m_1m_4+10664x_2^3x_5m_1m_4+26298x_1^2x_3x_5m_1m_4 \\
&+47004x_1x_2x_3x_5m_1m_4+26298x_2^2x_3x_5m_1m_4+26298x_1x_3^2x_5m_1m_4+26298x_2x_3^2x_5m_1m_4 \\
&+10664x_3^3x_5m_1m_4+26298x_1^2x_4x_5m_1m_4 \\
&+47004x_1x_2x_4x_5m_1m_4+26298x_2^2x_4x_5m_1m_4+47004x_1x_3x_4x_5m_1m_4+47004x_2x_3x_4x_5m_1m_4 \\
&+26298x_3^2x_4x_5m_1m_4+26298x_1x_4^2x_5m_1m_4+26298x_2x_4^2x_5m_1m_4+26298x_3x_4^2x_5m_1m_4 \\
&+10664x_4^3x_5m_1m_4+14674x_1^2x_5^2m_1m_4+26298x_1x_2x_5^2m_1m_4+14674x_2^2x_5^2m_1m_4 \\
&+26298x_1x_3x_5^2m_1m_4+26298x_2x_3x_5^2m_1m_4+14674x_3^2x_5^2m_1m_4+26298x_1x_4x_5^2m_1m_4 \\
&+26298x_2x_4x_5^2m_1m_4+26298x_3x_4x_5^2m_1m_4 \\
&+14674x_4^2x_5^2m_1m_4+10664x_1x_5^3m_1m_4+10664x_2x_5^3m_1m_4+10664x_3x_5^3m_1m_4 \\
&+10664x_4x_5^3m_1m_4+3450x_5^4m_1m_4-2663x_1^3m_1^2m_4 \\
&-6694x_1^2x_2m_1^2m_4-6694x_1x_2^2m_1^2m_4 \\
&-2663x_2^3m_1^2m_4-6694x_1^2x_3m_1^2m_4-12093x_1x_2x_3m_1^2m_4-6694x_2^2x_3m_1^2m_4 \\
&-6694x_1x_3^2m_1^2m_4-6694x_2x_3^2m_1^2m_4-2663x_3^3m_1^2m_4-6694x_1^2x_4m_1^2m_4 \\
&-12093x_1x_2x_4m_1^2m_4-6694x_2^2x_4m_1^2m_4-12093x_1x_3x_4m_1^2m_4-12093x_2x_3x_4m_1^2m_4 \\
&-6694x_3^2x_4m_1^2m_4-6694x_1x_4^2m_1^2m_4-6694x_2x_4^2m_1^2m_4-6694x_3x_4^2m_1^2m_4 \\
&-2663x_4^3m_1^2m_4-6694x_1^2x_5m_1^2m_4-12093x_1x_2x_5m_1^2m_4 \\
&-6694x_2^2x_5m_1^2m_4-12093x_1x_3x_5m_1^2m_4-12093x_2x_3x_5m_1^2m_4-6694x_3^2x_5m_1^2m_4 \\
&-12093x_1x_4x_5m_1^2m_4-12093x_2x_4x_5m_1^2m_4-12093x_3x_4x_5m_1^2m_4-6694x_4^2x_5m_1^2m_4 \\
&-6694x_1x_5^2m_1^2m_4-6694x_2x_5^2m_1^2m_4-6694x_3x_5^2m_1^2m_4-6694x_4x_5^2m_1^2m_4 \\
&-2663x_5^3m_1^2m_4+798x_1^2m_1^3m_4+1458x_1x_2m_1^3m_4+798x_2^2m_1^3m_4+1458x_1x_3m_1^3m_4 \\
&+1458x_2x_3m_1^3m_4+798x_3^2m_1^3m_4+1458x_1x_4m_1^3m_4+1458x_2x_4m_1^3m_4+1458x_3x_4m_1^3m_4 \\
&+798x_4^2m_1^3m_4+1458x_1x_5m_1^3m_4+1458x_2x_5m_1^3m_4+1458x_3x_5m_1^3m_4+1458x_4x_5m_1^3m_4 \\
&+798x_5^2m_1^3m_4-72x_1m_1^4m_4-72x_2m_1^4m_4-72x_3m_1^4m_4-72x_4m_1^4m_4-72x_5m_1^4m_4 \\
&+3450x_1^4m_2m_4+10664x_1^3x_2m_2m_4+14674x_1^2x_2^2m_2m_4+10664x_1x_2^3m_2m_4+3450x_2^4m_2m_4 \\
&+10664x_1^3x_3m_2m_4+26298x_1^2x_2x_3m_2m_4+26298x_1x_2^2x_3m_2m_4+10664x_2^3x_3m_2m_4 \\
&+14674x_1^2x_3^2m_2m_4+26298x_1x_2x_3^2m_2m_4+14674x_2^2x_3^2m_2m_4 \\
&+10664x_1x_3^3m_2m_4+10664x_2x_3^3m_2m_4 \\
&+3450x_3^4m_2m_4+10664x_1^3x_4m_2m_4+26298x_1^2x_2x_4m_2m_4+26298x_1x_2^2x_4m_2m_4 \\
&+10664x_2^3x_4m_2m_4+26298x_1^2x_3x_4m_2m_4+47004x_1x_2x_3x_4m_2m_4 \\
&+26298x_2^2x_3x_4m_2m_4+26298x_1x_3^2x_4m_2m_4+26298x_2x_3^2x_4m_2m_4 \\
&+10664x_3^3x_4m_2m_4+14674x_1^2x_4^2m_2m_4 \\
&+26298x_1x_2x_4^2m_2m_4+14674x_2^2x_4^2m_2m_4+26298x_1x_3x_4^2m_2m_4+26298x_2x_3x_4^2m_2m_4 \\
&+14674x_3^2x_4^2m_2m_4+10664x_1x_4^3m_2m_4+10664x_2x_4^3m_2m_4+10664x_3x_4^3m_2m_4
\end{aligned}$$

$$\begin{aligned}
&+3450x_4^4m_2m_4+10664x_1^3x_5m_2m_4+26298x_1^2x_2x_5m_2m_4+26298x_1x_2^2x_5m_2m_4 \\
&+10664x_2^3x_5m_2m_4+26298x_1^2x_3x_5m_2m_4+47004x_1x_2x_3x_5m_2m_4+26298x_2^2x_3x_5m_2m_4 \\
&+26298x_1x_3^2x_5m_2m_4+26298x_2x_3^2x_5m_2m_4+10664x_3^3x_5m_2m_4 \\
&+26298x_1^2x_4x_5m_2m_4+47004x_1x_2x_4x_5m_2m_4 \\
&+26298x_2^2x_4x_5m_2m_4+47004x_1x_3x_4x_5m_2m_4+47004x_2x_3x_4x_5m_2m_4+26298x_3^2x_4x_5m_2m_4 \\
&+26298x_1x_4^2x_5m_2m_4+26298x_2x_4^2x_5m_2m_4+26298x_3x_4^2x_5m_2m_4+10664x_4^3x_5m_2m_4 \\
&+14674x_1^2x_5^2m_2m_4+26298x_1x_2x_5^2m_2m_4 \\
&+14674x_2^2x_5^2m_2m_4+26298x_1x_3x_5^2m_2m_4+26298x_2x_3x_5^2m_2m_4+14674x_3^2x_5^2m_2m_4 \\
&+26298x_1x_4x_5^2m_2m_4+26298x_2x_4x_5^2m_2m_4+26298x_3x_4x_5^2m_2m_4+14674x_4^2x_5^2m_2m_4 \\
&+10664x_1x_5^3m_2m_4+10664x_2x_5^3m_2m_4+10664x_3x_5^3m_2m_4+10664x_4x_5^3m_2m_4+3450x_5^4m_2m_4 \\
&-6912x_1^3m_1m_2m_4-17390x_1^2x_2m_1m_2m_4-17390x_1x_2^2m_1m_2m_4-6912x_2^3m_1m_2m_4 \\
&-17390x_1^2x_3m_1m_2m_4-31434x_1x_2x_3m_1m_2m_4-17390x_2^2x_3m_1m_2m_4-17390x_1x_3^2m_1m_2m_4 \\
&-17390x_2x_3^2m_1m_2m_4-6912x_3^3m_1m_2m_4-17390x_1^2x_4m_1m_2m_4-31434x_1x_2x_4m_1m_2m_4 \\
&-17390x_2^2x_4m_1m_2m_4-31434x_1x_3x_4m_1m_2m_4-31434x_2x_3x_4m_1m_2m_4-17390x_3^2x_4m_1m_2m_4 \\
&-17390x_1x_4^2m_1m_2m_4-17390x_2x_4^2m_1m_2m_4-17390x_3x_4^2m_1m_2m_4-6912x_4^3m_1m_2m_4 \\
&-17390x_1^2x_5m_1m_2m_4-31434x_1x_2x_5m_1m_2m_4-17390x_2^2x_5m_1m_2m_4 \\
&-31434x_1x_3x_5m_1m_2m_4-31434x_2x_3x_5m_1m_2m_4 \\
&-17390x_3^2x_5m_1m_2m_4-31434x_1x_4x_5m_1m_2m_4 \\
&-31434x_2x_4x_5m_1m_2m_4-31434x_3x_4x_5m_1m_2m_4-17390x_4^2x_5m_1m_2m_4-17390x_1x_5^2m_1m_2m_4 \\
&-17390x_2x_5^2m_1m_2m_4-17390x_3x_5^2m_1m_2m_4-17390x_4x_5^2m_1m_2m_4-6912x_5^3m_1m_2m_4 \\
&+4452x_1^2m_1^2m_2m_4+8122x_1x_2m_1^2m_2m_4+4452x_2^2m_1^2m_2m_4+8122x_1x_3m_1^2m_2m_4 \\
&+8122x_2x_3m_1^2m_2m_4+4452x_3^2m_1^2m_2m_4+8122x_1x_4m_1^2m_2m_4+8122x_2x_4m_1^2m_2m_4 \\
&+8122x_3x_4m_1^2m_2m_4+4452x_4^2m_1^2m_2m_4+8122x_1x_5m_1^2m_2m_4+8122x_2x_5m_1^2m_2m_4 \\
&+8122x_3x_5m_1^2m_2m_4+8122x_4x_5m_1^2m_2m_4+4452x_5^2m_1^2m_2m_4-1002x_1m_1^3m_2m_4 \\
&-1002x_2m_1^3m_2m_4-1002x_3m_1^3m_2m_4-1002x_4m_1^3m_2m_4-1002x_5m_1^3m_2m_4+51m_1^4m_2m_4 \\
&-2663x_1^3m_2^2m_4-6694x_1^2x_2m_2^2m_4-6694x_1x_2^2m_2^2m_4-2663x_2^3m_2^2m_4 \\
&-6694x_1^2x_3m_2^2m_4-12093x_1x_2x_3m_2^2m_4-6694x_2^2x_3m_2^2m_4-6694x_1x_3^2m_2^2m_4 \\
&-6694x_2x_3^2m_2^2m_4-2663x_3^3m_2^2m_4-6694x_1^2x_4m_2^2m_4-12093x_1x_2x_4m_2^2m_4 \\
&-6694x_2^2x_4m_2^2m_4-12093x_1x_3x_4m_2^2m_4-12093x_2x_3x_4m_2^2m_4 \\
&-6694x_3^2x_4m_2^2m_4-6694x_1x_4^2m_2^2m_4-6694x_2x_4^2m_2^2m_4-6694x_3x_4^2m_2^2m_4 \\
&-2663x_4^3m_2^2m_4-6694x_1^2x_5m_2^2m_4-12093x_1x_2x_5m_2^2m_4 \\
&-6694x_2^2x_5m_2^2m_4-12093x_1x_3x_5m_2^2m_4-12093x_2x_3x_5m_2^2m_4-6694x_3^2x_5m_2^2m_4 \\
&-12093x_1x_4x_5m_2^2m_4-12093x_2x_4x_5m_2^2m_4-12093x_3x_4x_5m_2^2m_4-6694x_4^2x_5m_2^2m_4 \\
&-6694x_1x_5^2m_2^2m_4-6694x_2x_5^2m_2^2m_4-6694x_3x_5^2m_2^2m_4-6694x_4x_5^2m_2^2m_4 \\
&-2663x_5^3m_2^2m_4+4452x_1^2m_1m_2^2m_4+8122x_1x_2m_1m_2^2m_4+4452x_2^2m_1m_2^2m_4 \\
&+8122x_1x_3m_1m_2^2m_4+8122x_2x_3m_1m_2^2m_4+4452x_3^2m_1m_2^2m_4+8122x_1x_4m_1m_2^2m_4 \\
&+8122x_2x_4m_1m_2^2m_4+8122x_3x_4m_1m_2^2m_4+4452x_4^2m_1m_2^2m_4+8122x_1x_5m_1m_2^2m_4 \\
&+8122x_2x_5m_1m_2^2m_4+8122x_3x_5m_1m_2^2m_4+8122x_4x_5m_1m_2^2m_4 \\
&+4452x_5^2m_1m_2^2m_4-2158x_1m_1^2m_2^2m_4-2158x_2m_1^2m_2^2m_4-2158x_3m_1^2m_2^2m_4 \\
&-2158x_4m_1^2m_2^2m_4-2158x_5m_1^2m_2^2m_4+279m_1^3m_2^2m_4+798x_1^2m_2^3m_4 \\
&+1458x_1x_2m_2^3m_4+798x_2^2m_2^3m_4+1458x_1x_3m_2^3m_4+1458x_2x_3m_2^3m_4
\end{aligned}$$

$$\begin{aligned}
&+798x_3^2m_2^3m_4+1458x_1x_4m_2^3m_4+1458x_2x_4m_2^3m_4+1458x_3x_4m_2^3m_4+798x_4^2m_2^3m_4 \\
&+1458x_1x_5m_2^3m_4+1458x_2x_5m_2^3m_4+1458x_3x_5m_2^3m_4+1458x_4x_5m_2^3m_4+798x_5^2m_2^3m_4 \\
&-1002x_1m_1m_2^3m_4-1002x_2m_1m_2^3m_4-1002x_3m_1m_2^3m_4-1002x_4m_1m_2^3m_4 \\
&-1002x_5m_1m_2^3m_4+279m_1^2m_2^3m_4-72x_1m_2^4m_4-72x_2m_2^4m_4-72x_3m_2^4m_4-72x_4m_2^4m_4 \\
&-72x_5m_2^4m_4+51m_1m_2^4m_4+3450x_1^4m_3m_4+10664x_1^3x_2m_3m_4+14674x_1^2x_2^2m_3m_4 \\
&+10664x_1x_2^3m_3m_4+3450x_2^4m_3m_4+10664x_1^3x_3m_3m_4+26298x_1^2x_2x_3m_3m_4 \\
&+26298x_1x_2^2x_3m_3m_4+10664x_2^3x_3m_3m_4+14674x_1^2x_3^2m_3m_4 \\
&+26298x_1x_2x_3^2m_3m_4+14674x_2^2x_3^2m_3m_4 \\
&+10664x_1x_3^3m_3m_4+10664x_2x_3^3m_3m_4+3450x_3^4m_3m_4+10664x_1^3x_4m_3m_4 \\
&+26298x_1^2x_2x_4m_3m_4+26298x_1x_2^2x_4m_3m_4+10664x_2^3x_4m_3m_4+26298x_1^2x_3x_4m_3m_4 \\
&+47004x_1x_2x_3x_4m_3m_4+26298x_2^2x_3x_4m_3m_4+26298x_1x_3^2x_4m_3m_4+26298x_2x_3^2x_4m_3m_4 \\
&+10664x_3^3x_4m_3m_4+14674x_1^2x_4^2m_3m_4+26298x_1x_2x_4^2m_3m_4+14674x_2^2x_4^2m_3m_4 \\
&+26298x_1x_3x_4^2m_3m_4+26298x_2x_3x_4^2m_3m_4+14674x_3^2x_4^2m_3m_4+10664x_1x_4^3m_3m_4 \\
&+10664x_2x_4^3m_3m_4+10664x_3x_4^3m_3m_4+3450x_4^4m_3m_4 \\
&+10664x_1^3x_5m_3m_4+26298x_1^2x_2x_5m_3m_4 \\
&+26298x_1x_2^2x_5m_3m_4+10664x_2^3x_5m_3m_4+26298x_1^2x_3x_5m_3m_4+47004x_1x_2x_3x_5m_3m_4 \\
&+26298x_2^2x_3x_5m_3m_4+26298x_1x_3^2x_5m_3m_4+26298x_2x_3^2x_5m_3m_4+10664x_3^3x_5m_3m_4 \\
&+26298x_2^2x_4x_5m_3m_4+47004x_1x_2x_4x_5m_3m_4+26298x_2^2x_4x_5m_3m_4+47004x_1x_3x_4x_5m_3m_4 \\
&+47004x_2x_3x_4x_5m_3m_4+26298x_3^2x_4x_5m_3m_4+26298x_1x_4^2x_5m_3m_4+26298x_2x_4^2x_5m_3m_4 \\
&+26298x_3x_4^2x_5m_3m_4+10664x_4^3x_5m_3m_4+14674x_1^2x_5^2m_3m_4+26298x_1x_2x_5^2m_3m_4 \\
&+14674x_2^2x_5^2m_3m_4+26298x_1x_3x_5^2m_3m_4+26298x_2x_3x_5^2m_3m_4 \\
&+14674x_3^2x_5^2m_3m_4+26298x_1x_4x_5^2m_3m_4 \\
&+26298x_2x_4x_5^2m_3m_4+26298x_3x_4x_5^2m_3m_4+14674x_4^2x_5^2m_3m_4+10664x_1x_5^3m_3m_4 \\
&+10664x_2x_5^3m_3m_4+10664x_3x_5^3m_3m_4+10664x_4x_5^3m_3m_4+3450x_5^4m_3m_4-6912x_1^3m_1m_3m_4 \\
&-17390x_1^2x_2m_1m_3m_4-17390x_1x_2^2m_1m_3m_4-6912x_2^3m_1m_3m_4-17390x_1^2x_3m_1m_3m_4 \\
&-31434x_1x_2x_3m_1m_3m_4-17390x_2^2x_3m_1m_3m_4-17390x_1x_3^2m_1m_3m_4-17390x_2x_3^2m_1m_3m_4 \\
&-6912x_3^3m_1m_3m_4-17390x_1^2x_4m_1m_3m_4-31434x_1x_2x_4m_1m_3m_4-17390x_2^2x_4m_1m_3m_4 \\
&-31434x_1x_3x_4m_1m_3m_4-31434x_2x_3x_4m_1m_3m_4-17390x_3^2x_4m_1m_3m_4-17390x_1x_4^2m_1m_3m_4 \\
&-17390x_2x_4^2m_1m_3m_4-17390x_3x_4^2m_1m_3m_4-6912x_4^3m_1m_3m_4-17390x_1^2x_5m_1m_3m_4 \\
&-31434x_1x_2x_5m_1m_3m_4-17390x_2^2x_5m_1m_3m_4 \\
&-31434x_1x_3x_5m_1m_3m_4-31434x_2x_3x_5m_1m_3m_4 \\
&-17390x_3^2x_5m_1m_3m_4-31434x_1x_4x_5m_1m_3m_4 \\
&-31434x_2x_4x_5m_1m_3m_4-31434x_3x_4x_5m_1m_3m_4-17390x_4^2x_5m_1m_3m_4-17390x_1x_5^2m_1m_3m_4 \\
&-17390x_2x_5^2m_1m_3m_4-17390x_3x_5^2m_1m_3m_4-17390x_4x_5^2m_1m_3m_4-6912x_5^3m_1m_3m_4 \\
&+4452x_1^2m_1^2m_3m_4+8122x_1x_2m_1^2m_3m_4+4452x_2^2m_1^2m_3m_4+8122x_1x_3m_1^2m_3m_4 \\
&+8122x_2x_3m_1^2m_3m_4+4452x_3^2m_1^2m_3m_4+8122x_1x_4m_1^2m_3m_4+8122x_2x_4m_1^2m_3m_4 \\
&+8122x_3x_4m_1^2m_3m_4+4452x_4^2m_1^2m_3m_4+8122x_1x_5m_1^2m_3m_4+8122x_2x_5m_1^2m_3m_4 \\
&+8122x_3x_5m_1^2m_3m_4+8122x_4x_5m_1^2m_3m_4+4452x_5^2m_1^2m_3m_4-1002x_1m_1^3m_3m_4 \\
&-1002x_2m_1^3m_3m_4-1002x_3m_1^3m_3m_4-1002x_4m_1^3m_3m_4-1002x_5m_1^3m_3m_4+51m_1^4m_3m_4 \\
&-6912x_1^3m_2m_3m_4-17390x_1^2x_2m_2m_3m_4-17390x_1x_2^2m_2m_3m_4 \\
&-6912x_2^3m_2m_3m_4-17390x_1^2x_3m_2m_3m_4-31434x_1x_2x_3m_2m_3m_4-17390x_2^2x_3m_2m_3m_4
\end{aligned}$$

$$\begin{aligned}
& -17390x_1x_3^2m_2m_3m_4 - 17390x_2x_3^2m_2m_3m_4 - 6912x_3^3m_2m_3m_4 - 17390x_1^2x_4m_2m_3m_4 \\
& - 31434x_1x_2x_4m_2m_3m_4 - 17390x_2^2x_4m_2m_3m_4 - 31434x_1x_3x_4m_2m_3m_4 \\
& - 31434x_2x_3x_4m_2m_3m_4 - 17390x_3^2x_4m_2m_3m_4 - 17390x_1x_4^2m_2m_3m_4 \\
& - 17390x_2x_4^2m_2m_3m_4 - 17390x_3x_4^2m_2m_3m_4 - 6912x_4^3m_2m_3m_4 \\
& - 17390x_1^2x_5m_2m_3m_4 - 31434x_1x_2x_5m_2m_3m_4 - 17390x_2^2x_5m_2m_3m_4 \\
& - 31434x_1x_3x_5m_2m_3m_4 - 31434x_2x_3x_5m_2m_3m_4 - 17390x_3^2x_5m_2m_3m_4 \\
& - 31434x_1x_4x_5m_2m_3m_4 - 31434x_2x_4x_5m_2m_3m_4 - 31434x_3x_4x_5m_2m_3m_4 \\
& - 17390x_4^2x_5m_2m_3m_4 - 17390x_1x_5^2m_2m_3m_4 - 17390x_2x_5^2m_2m_3m_4 \\
& - 17390x_3x_5^2m_2m_3m_4 - 17390x_4x_5^2m_2m_3m_4 - 6912x_5^3m_2m_3m_4 + 11336x_1^2m_1m_2m_3m_4 \\
& + 20672x_1x_2m_1m_2m_3m_4 + 11336x_2^2m_1m_2m_3m_4 \\
& + 20672x_1x_3m_1m_2m_3m_4 + 20672x_2x_3m_1m_2m_3m_4 \\
& + 11336x_3^2m_1m_2m_3m_4 + 20672x_1x_4m_1m_2m_3m_4 \\
& + 20672x_2x_4m_1m_2m_3m_4 + 20672x_3x_4m_1m_2m_3m_4 + 11336x_4^2m_1m_2m_3m_4 \\
& + 20672x_1x_5m_1m_2m_3m_4 + 20672x_2x_5m_1m_2m_3m_4 + 20672x_3x_5m_1m_2m_3m_4 \\
& + 20672x_4x_5m_1m_2m_3m_4 + 11336x_5^2m_1m_2m_3m_4 \\
& - 5394x_1m_1^2m_2m_3m_4 - 5394x_2m_1^2m_2m_3m_4 \\
& - 5394x_3m_1^2m_2m_3m_4 - 5394x_4m_1^2m_2m_3m_4 - 5394x_5m_1^2m_2m_3m_4 + 684m_1^3m_2m_3m_4 \\
& + 4452x_1^2m_2^2m_3m_4 + 8122x_1x_2m_2^2m_3m_4 + 4452x_2^2m_2^2m_3m_4 \\
& + 8122x_1x_3m_2^2m_3m_4 + 8122x_2x_3m_2^2m_3m_4 \\
& + 4452x_3^2m_2^2m_3m_4 + 8122x_1x_4m_2^2m_3m_4 + 8122x_2x_4m_2^2m_3m_4 + 8122x_3x_4m_2^2m_3m_4 \\
& + 4452x_4^2m_2^2m_3m_4 + 8122x_1x_5m_2^2m_3m_4 + 8122x_2x_5m_2^2m_3m_4 + 8122x_3x_5m_2^2m_3m_4 \\
& + 8122x_4x_5m_2^2m_3m_4 + 4452x_5^2m_2^2m_3m_4 - 5394x_1m_1m_2^2m_3m_4 - 5394x_2m_1m_2^2m_3m_4 \\
& - 5394x_3m_1m_2^2m_3m_4 - 5394x_4m_1m_2^2m_3m_4 - 5394x_5m_1m_2^2m_3m_4 + 1456m_1^2m_2^2m_3m_4 \\
& - 1002x_1m_3^2m_3m_4 - 1002x_2m_3^2m_3m_4 - 1002x_3m_3^2m_3m_4 - 1002x_4m_3^2m_3m_4 \\
& - 1002x_5m_3^2m_3m_4 + 684m_1m_3^2m_3m_4 + 51m_4^2m_3m_4 - 2663x_1^3m_3^2m_4 - 6694x_1^2x_2m_3^2m_4 \\
& - 6694x_1x_2^2m_3^2m_4 - 2663x_3^3m_3^2m_4 - 6694x_1^2x_3m_3^2m_4 - 12093x_1x_2x_3m_3^2m_4 \\
& - 6694x_2^2x_3m_3^2m_4 - 6694x_1x_3^2m_3^2m_4 - 6694x_2x_3^2m_3^2m_4 - 2663x_3^3m_3^2m_4 \\
& - 6694x_1^2x_4m_3^2m_4 - 12093x_1x_2x_4m_3^2m_4 \\
& - 6694x_2^2x_4m_3^2m_4 - 12093x_1x_3x_4m_3^2m_4 - 12093x_2x_3x_4m_3^2m_4 - 6694x_3^2x_4m_3^2m_4 \\
& - 6694x_1x_4^2m_3^2m_4 - 6694x_2x_4^2m_3^2m_4 - 6694x_3x_4^2m_3^2m_4 - 2663x_4^3m_3^2m_4 \\
& - 6694x_1^2x_5m_3^2m_4 - 12093x_1x_2x_5m_3^2m_4 - 6694x_2^2x_5m_3^2m_4 - 12093x_1x_3x_5m_3^2m_4 \\
& - 12093x_2x_3x_5m_3^2m_4 - 6694x_3^2x_5m_3^2m_4 - 12093x_1x_4x_5m_3^2m_4 - 12093x_2x_4x_5m_3^2m_4 \\
& - 12093x_3x_4x_5m_3^2m_4 - 6694x_4^2x_5m_3^2m_4 - 6694x_1x_5^2m_3^2m_4 - 6694x_2x_5^2m_3^2m_4 \\
& - 6694x_3x_5^2m_3^2m_4 - 6694x_4x_5^2m_3^2m_4 - 2663x_5^3m_3^2m_4 + 4452x_1^2m_1m_3^2m_4 \\
& + 8122x_1x_2m_1m_3^2m_4 + 4452x_2^2m_1m_3^2m_4 \\
& + 8122x_1x_3m_1m_3^2m_4 + 8122x_2x_3m_1m_3^2m_4 + 4452x_3^2m_1m_3^2m_4 + 8122x_1x_4m_1m_3^2m_4 \\
& + 8122x_2x_4m_1m_3^2m_4 + 8122x_3x_4m_1m_3^2m_4 + 4452x_4^2m_1m_3^2m_4 + 8122x_1x_5m_1m_3^2m_4 \\
& + 8122x_2x_5m_1m_3^2m_4 + 8122x_3x_5m_1m_3^2m_4 + 8122x_4x_5m_1m_3^2m_4 \\
& + 4452x_5^2m_1m_3^2m_4 - 2158x_1m_1^2m_3^2m_4 - 2158x_2m_1^2m_3^2m_4 - 2158x_3m_1^2m_3^2m_4 \\
& - 2158x_4m_1^2m_3^2m_4 - 2158x_5m_1^2m_3^2m_4 + 279m_1^3m_3^2m_4 + 4452x_1^2m_2m_3^2m_4 \\
& + 8122x_1x_2m_2m_3^2m_4 + 4452x_2^2m_2m_3^2m_4 + 8122x_1x_3m_2m_3^2m_4
\end{aligned}$$

$$\begin{aligned}
&+8122x_2x_3m_2m_3^2m_4+4452x_3^2m_2m_3^2m_4 \\
&+8122x_1x_4m_2m_3^2m_4+8122x_2x_4m_2m_3^2m_4+8122x_3x_4m_2m_3^2m_4+4452x_4^2m_2m_3^2m_4 \\
&+8122x_1x_5m_2m_3^2m_4+8122x_2x_5m_2m_3^2m_4+8122x_3x_5m_2m_3^2m_4+8122x_4x_5m_2m_3^2m_4 \\
&+4452x_5^2m_2m_3^2m_4-5394x_1m_1m_2m_3^2m_4-5394x_2m_1m_2m_3^2m_4-5394x_3m_1m_2m_3^2m_4 \\
&-5394x_4m_1m_2m_3^2m_4-5394x_5m_1m_2m_3^2m_4+1456m_1^2m_2m_3^2m_4 \\
&-2158x_1m_2^2m_3^2m_4-2158x_2m_2^2m_3^2m_4 \\
&-2158x_3m_2^2m_3^2m_4-2158x_4m_2^2m_3^2m_4-2158x_5m_2^2m_3^2m_4+1456m_1m_2^2m_3^2m_4 \\
&+279m_2^3m_3^2m_4+798x_1^2m_3^3m_4+1458x_1x_2m_3^3m_4+798x_2^2m_3^3m_4+1458x_1x_3m_3^3m_4 \\
&+1458x_2x_3m_3^3m_4+798x_3^2m_3^3m_4+1458x_1x_4m_3^3m_4+1458x_2x_4m_3^3m_4+1458x_3x_4m_3^3m_4 \\
&+798x_4^2m_3^3m_4+1458x_1x_5m_3^3m_4+1458x_2x_5m_3^3m_4+1458x_3x_5m_3^3m_4+1458x_4x_5m_3^3m_4 \\
&+798x_5^2m_3^3m_4-1002x_1m_1m_3^3m_4-1002x_2m_1m_3^3m_4-1002x_3m_1m_3^3m_4-1002x_4m_1m_3^3m_4 \\
&-1002x_5m_1m_3^3m_4+279m_1^2m_3^3m_4-1002x_1m_2m_3^3m_4-1002x_2m_2m_3^3m_4-1002x_3m_2m_3^3m_4 \\
&-1002x_4m_2m_3^3m_4-1002x_5m_2m_3^3m_4 \\
&+684m_1m_2m_3^4m_4+279m_2^2m_3^4m_4-72x_1m_3^4m_4-72x_2m_3^4m_4-72x_3m_3^4m_4-72x_4m_3^4m_4 \\
&-72x_5m_3^4m_4+51m_1m_3^4m_4+51m_2m_3^4m_4+1305x_1^4m_4^2+4020x_1^3x_2m_4^2 \\
&+5523x_1^2x_2^2m_4^2+4020x_1x_2^3m_4^2+1305x_2^4m_4^2+4020x_1^3x_3m_4^2+9883x_1^2x_2x_3m_4^2 \\
&+9883x_1x_2^2x_3m_4^2+4020x_2^3x_3m_4^2+5523x_1^2x_3^2m_4^2+9883x_1x_2x_3^2m_4^2+5523x_2^2x_3^2m_4^2 \\
&+4020x_1x_3^3m_4^2+4020x_2x_3^3m_4^2+1305x_3^4m_4^2+4020x_1^3x_4m_4^2+9883x_1^2x_2x_4m_4^2 \\
&+9883x_1x_2^2x_4m_4^2+4020x_2^3x_4m_4^2+9883x_1^2x_3x_4m_4^2+17634x_1x_2x_3x_4m_4^2 \\
&+9883x_2^2x_3x_4m_4^2+9883x_1x_2^2x_4m_4^2+9883x_2x_2^2x_4m_4^2+4020x_3^3x_4m_4^2 \\
&+5523x_1^2x_2^2m_4^2+9883x_1x_2x_4^2m_4^2+5523x_2^2x_4^2m_4^2+9883x_1x_3x_4^2m_4^2 \\
&+9883x_2x_3x_4^2m_4^2+5523x_3^2x_4^2m_4^2+4020x_1x_4^3m_4^2+4020x_2x_4^3m_4^2+4020x_3x_4^3m_4^2 \\
&+1305x_4^4m_4^2+4020x_1^3x_5m_4^2+9883x_1^2x_2x_5m_4^2+9883x_1x_2^2x_5m_4^2+4020x_2^3x_5m_4^2 \\
&+9883x_1^2x_3x_5m_4^2+17634x_1x_2x_3x_5m_4^2+9883x_2^2x_3x_5m_4^2+9883x_1x_3^2x_5m_4^2 \\
&+9883x_2x_2^2x_5m_4^2+4020x_3^3x_5m_4^2+9883x_1^2x_4x_5m_4^2+17634x_1x_2x_4x_5m_4^2 \\
&+9883x_2^2x_4x_5m_4^2+17634x_1x_3x_4x_5m_4^2+17634x_2x_3x_4x_5m_4^2+9883x_3^2x_4x_5m_4^2 \\
&+9883x_1x_4^2x_5m_4^2+9883x_2x_4^2x_5m_4^2+9883x_3x_4^2x_5m_4^2 \\
&+4020x_4^3x_5m_4^2+5523x_1^2x_5^2m_4^2+9883x_1x_2x_5^2m_4^2+5523x_2^2x_5^2m_4^2 \\
&+9883x_1x_3x_5^2m_4^2+9883x_2x_3x_5^2m_4^2+5523x_3^2x_5^2m_4^2+9883x_1x_4x_5^2m_4^2 \\
&+9883x_2x_4x_5^2m_4^2+9883x_3x_4x_5^2m_4^2+5523x_4^2x_5^2m_4^2 \\
&+4020x_1x_5^3m_4^2+4020x_2x_5^3m_4^2 \\
&+4020x_3x_5^3m_4^2+4020x_4x_5^3m_4^2+1305x_5^4m_4^2-2663x_1^3m_1m_4^2-6694x_1^2x_2m_1m_4^2 \\
&-6694x_1x_2^2m_1m_4^2-2663x_2^3m_1m_4^2-6694x_1^2x_3m_1m_4^2-12093x_1x_2x_3m_1m_4^2 \\
&-6694x_2^2x_3m_1m_4^2-6694x_1x_3^2m_1m_4^2-6694x_2x_3^2m_1m_4^2-2663x_3^3m_1m_4^2 \\
&-6694x_1^2x_4m_1m_4^2-12093x_1x_2x_4m_1m_4^2-6694x_2^2x_4m_1m_4^2-12093x_1x_3x_4m_1m_4^2 \\
&-12093x_2x_3x_4m_1m_4^2-6694x_3^2x_4m_1m_4^2 \\
&-6694x_1x_4^2m_1m_4^2-6694x_2x_4^2m_1m_4^2-6694x_3x_4^2m_1m_4^2 \\
&-2663x_4^3m_1m_4^2-6694x_1^2x_5m_1m_4^2-12093x_1x_2x_5m_1m_4^2 \\
&-6694x_2^2x_5m_1m_4^2-12093x_1x_3x_5m_1m_4^2-12093x_2x_3x_5m_1m_4^2 \\
&-6694x_3^2x_5m_1m_4^2-12093x_1x_4x_5m_1m_4^2-12093x_2x_4x_5m_1m_4^2-12093x_3x_4x_5m_1m_4^2 \\
&-6694x_4^2x_5m_1m_4^2-6694x_1x_5^2m_1m_4^2-6694x_2x_5^2m_1m_4^2-6694x_3x_5^2m_1m_4^2
\end{aligned}$$

$$\begin{aligned}
& -6694x_4x_5^2m_1m_4^2 - 2663x_5^3m_1m_4^2 + 1748x_1^2m_1^2m_4^2 + 3190x_1x_2m_1^2m_4^2 \\
& + 1748x_2^2m_1^2m_4^2 + 3190x_1x_3m_1^2m_4^2 + 3190x_2x_3m_1^2m_4^2 + 1748x_3^2m_1^2m_4^2 \\
& + 3190x_1x_4m_1^2m_4^2 + 3190x_2x_4m_1^2m_4^2 + 3190x_3x_4m_1^2m_4^2 + 1748x_4^2m_1^2m_4^2 \\
& + 3190x_1x_5m_1^2m_4^2 + 3190x_2x_5m_1^2m_4^2 + 3190x_3x_5m_1^2m_4^2 + 3190x_4x_5m_1^2m_4^2 \\
& + 1748x_5^2m_1^2m_4^2 - 402x_1m_1^3m_4^2 - 402x_2m_1^3m_4^2 - 402x_3m_1^3m_4^2 - 402x_4m_1^3m_4^2 \\
& - 402x_5m_1^3m_4^2 + 21m_1^4m_4^2 - 2663x_1^3m_2m_4^2 - 6694x_1^2x_2m_2m_4^2 - 6694x_1x_2^2m_2m_4^2 \\
& - 2663x_2^3m_2m_4^2 - 6694x_1^2x_3m_2m_4^2 - 12093x_1x_2x_3m_2m_4^2 - 6694x_2^2x_3m_2m_4^2 \\
& - 6694x_1x_3^2m_2m_4^2 - 6694x_2x_3^2m_2m_4^2 - 2663x_3^3m_2m_4^2 - 6694x_1^2x_4m_2m_4^2 \\
& - 12093x_1x_2x_4m_2m_4^2 - 6694x_2^2x_4m_2m_4^2 - 12093x_1x_3x_4m_2m_4^2 - 12093x_2x_3x_4m_2m_4^2 \\
& - 6694x_3^2x_4m_2m_4^2 - 6694x_1x_4^2m_2m_4^2 - 6694x_2x_4^2m_2m_4^2 - 6694x_3x_4^2m_2m_4^2 \\
& - 2663x_4^3m_2m_4^2 - 6694x_1^2x_5m_2m_4^2 - 12093x_1x_2x_5m_2m_4^2 - 6694x_2^2x_5m_2m_4^2 \\
& - 12093x_1x_3x_5m_2m_4^2 - 12093x_2x_3x_5m_2m_4^2 - 6694x_3^2x_5m_2m_4^2 - 12093x_1x_4x_5m_2m_4^2 \\
& - 12093x_2x_4x_5m_2m_4^2 - 12093x_3x_4x_5m_2m_4^2 - 6694x_4^2x_5m_2m_4^2 - 6694x_1x_5^2m_2m_4^2 \\
& - 6694x_2x_5^2m_2m_4^2 - 6694x_3x_5^2m_2m_4^2 - 6694x_4x_5^2m_2m_4^2 - 2663x_5^3m_2m_4^2 \\
& + 4452x_1^2m_1m_2m_4^2 + 8122x_1x_2m_1m_2m_4^2 + 4452x_2^2m_1m_2m_4^2 + 8122x_1x_3m_1m_2m_4^2 \\
& + 8122x_2x_3m_1m_2m_4^2 + 4452x_3^2m_1m_2m_4^2 + 8122x_1x_4m_1m_2m_4^2 + 8122x_2x_4m_1m_2m_4^2 \\
& + 8122x_3x_4m_1m_2m_4^2 + 4452x_4^2m_1m_2m_4^2 + 8122x_1x_5m_1m_2m_4^2 + 8122x_2x_5m_1m_2m_4^2 \\
& + 8122x_3x_5m_1m_2m_4^2 + 8122x_4x_5m_1m_2m_4^2 + 4452x_5^2m_1m_2m_4^2 - 2158x_1m_1^2m_2m_4^2 \\
& - 2158x_2m_1^2m_2m_4^2 - 2158x_3m_1^2m_2m_4^2 - 2158x_4m_1^2m_2m_4^2 - 2158x_5m_1^2m_2m_4^2 \\
& + 279m_1^3m_2m_4^2 + 1748x_1^2m_2^2m_4^2 + 3190x_1x_2m_2^2m_4^2 + 1748x_2^2m_2^2m_4^2 \\
& + 3190x_1x_3m_2^2m_4^2 + 3190x_2x_3m_2^2m_4^2 + 1748x_3^2m_2^2m_4^2 + 3190x_1x_4m_2^2m_4^2 \\
& + 3190x_2x_4m_2^2m_4^2 + 3190x_3x_4m_2^2m_4^2 + 1748x_4^2m_2^2m_4^2 + 3190x_1x_5m_2^2m_4^2 \\
& + 3190x_2x_5m_2^2m_4^2 + 3190x_3x_5m_2^2m_4^2 + 3190x_4x_5m_2^2m_4^2 + 1748x_5^2m_2^2m_4^2 \\
& - 2158x_1m_1m_2^2m_4^2 - 2158x_2m_1m_2^2m_4^2 - 2158x_3m_1m_2^2m_4^2 - 2158x_4m_1m_2^2m_4^2 \\
& - 2158x_5m_1m_2^2m_4^2 + 593m_1^2m_2^2m_4^2 - 402x_1m_1^3m_2^2m_4^2 - 402x_2m_1^3m_2^2m_4^2 \\
& - 402x_3m_1^3m_2^2m_4^2 - 402x_4m_1^3m_2^2m_4^2 - 402x_5m_1^3m_2^2m_4^2 + 279m_1m_1^3m_2^2m_4^2 \\
& + 21m_2^4m_4^2 - 2663x_1^3m_3m_4^2 - 6694x_1^2x_2m_3m_4^2 - 6694x_1x_2^2m_3m_4^2 \\
& - 2663x_2^3m_3m_4^2 - 6694x_1^2x_3m_3m_4^2 - 12093x_1x_2x_3m_3m_4^2 - 6694x_2^2x_3m_3m_4^2 \\
& - 6694x_1x_3^2m_3m_4^2 - 6694x_2x_3^2m_3m_4^2 - 2663x_3^3m_3m_4^2 - 6694x_1^2x_4m_3m_4^2 \\
& - 12093x_1x_2x_4m_3m_4^2 - 6694x_2^2x_4m_3m_4^2 - 6694x_1x_4^2m_3m_4^2 - 6694x_2x_4^2m_3m_4^2 \\
& - 2663x_4^3m_3m_4^2 - 6694x_1^2x_5m_3m_4^2 - 12093x_1x_2x_5m_3m_4^2 - 6694x_2^2x_5m_3m_4^2 \\
& - 6694x_1x_5^2m_3m_4^2 - 12093x_1x_3x_5m_3m_4^2 - 12093x_2x_3x_5m_3m_4^2 - 6694x_3^2x_5m_3m_4^2 \\
& - 12093x_1x_4x_5m_3m_4^2 - 12093x_2x_4x_5m_3m_4^2 - 12093x_3x_4x_5m_3m_4^2 - 6694x_4^2x_5m_3m_4^2 \\
& - 6694x_1x_5^2m_3m_4^2 - 6694x_2x_5^2m_3m_4^2 - 6694x_3x_5^2m_3m_4^2 - 6694x_4x_5^2m_3m_4^2 \\
& - 2663x_5^3m_3m_4^2 + 4452x_1^2m_1m_3m_4^2 + 8122x_1x_2m_1m_3m_4^2 + 4452x_2^2m_1m_3m_4^2 \\
& + 8122x_1x_3m_1m_3m_4^2 + 8122x_2x_3m_1m_3m_4^2 + 4452x_3^2m_1m_3m_4^2 \\
& + 8122x_1x_4m_1m_3m_4^2 + 8122x_2x_4m_1m_3m_4^2 \\
& + 8122x_3x_4m_1m_3m_4^2 + 4452x_4^2m_1m_3m_4^2 + 8122x_1x_5m_1m_3m_4^2 \\
& + 8122x_2x_5m_1m_3m_4^2 + 8122x_3x_5m_1m_3m_4^2 \\
& + 8122x_4x_5m_1m_3m_4^2 + 4452x_5^2m_1m_3m_4^2 - 2158x_1m_1^2m_3m_4^2 - 2158x_2m_1^2m_3m_4^2 \\
& - 2158x_3m_1^2m_3m_4^2
\end{aligned}$$

$$\begin{aligned}
& -2158x_4m_1^2m_3m_4^2 - 2158x_5m_1^2m_3m_4^2 + 279m_1^3m_3m_4^2 + 4452x_1^2m_2m_3m_4^2 + 8122x_1x_2m_2m_3m_4^2 \\
& + 4452x_2^2m_2m_3m_4^2 + 8122x_1x_3m_2m_3m_4^2 + 8122x_2x_3m_2m_3m_4^2 \\
& + 4452x_3^2m_2m_3m_4^2 + 8122x_1x_4m_2m_3m_4^2 + 8122x_2x_4m_2m_3m_4^2 \\
& + 8122x_3x_4m_2m_3m_4^2 + 4452x_4^2m_2m_3m_4^2 \\
& + 8122x_1x_5m_2m_3m_4^2 + 8122x_2x_5m_2m_3m_4^2 + 8122x_3x_5m_2m_3m_4^2 \\
& + 8122x_4x_5m_2m_3m_4^2 + 4452x_5^2m_2m_3m_4^2 \\
& - 5394x_1m_1m_2m_3m_4^2 - 5394x_2m_1m_2m_3m_4^2 - 5394x_3m_1m_2m_3m_4^2 - 5394x_4m_1m_2m_3m_4^2 \\
& - 5394x_5m_1m_2m_3m_4^2 + 1456m_1^2m_2m_3m_4^2 - 2158x_1m_2^2m_3m_4^2 - 2158x_2m_2^2m_3m_4^2 \\
& - 2158x_3m_2^2m_3m_4^2 - 2158x_4m_2^2m_3m_4^2 \\
& - 2158x_5m_2^2m_3m_4^2 + 1456m_1m_2^2m_3m_4^2 + 279m_2^3m_3m_4^2 + 1748x_1^2m_3^2m_4^2 + 3190x_1x_2m_3^2m_4^2 \\
& + 1748x_2^2m_3^2m_4^2 + 3190x_1x_3m_3^2m_4^2 + 3190x_2x_3m_3^2m_4^2 + 1748x_3^2m_3^2m_4^2 + 3190x_1x_4m_3^2m_4^2 \\
& + 3190x_2x_4m_3^2m_4^2 + 3190x_3x_4m_3^2m_4^2 + 1748x_4^2m_3^2m_4^2 + 3190x_1x_5m_3^2m_4^2 + 3190x_2x_5m_3^2m_4^2 \\
& + 3190x_3x_5m_3^2m_4^2 + 3190x_4x_5m_3^2m_4^2 + 1748x_5^2m_3^2m_4^2 - 2158x_1m_1m_3^2m_4^2 - 2158x_2m_1m_3^2m_4^2 \\
& - 2158x_3m_1m_3^2m_4^2 - 2158x_4m_1m_3^2m_4^2 - 2158x_5m_1m_3^2m_4^2 + 593m_1^2m_3^2m_4^2 - 2158x_1m_2m_3^2m_4^2 \\
& - 2158x_2m_2m_3^2m_4^2 - 2158x_3m_2m_3^2m_4^2 - 2158x_4m_2m_3^2m_4^2 - 2158x_5m_2m_3^2m_4^2 + 1456m_1m_2m_3^2m_4^2 \\
& + 593m_2^2m_3^2m_4^2 - 402x_1m_3^3m_4^2 - 402x_2m_3^3m_4^2 - 402x_3m_3^3m_4^2 - 402x_4m_3^3m_4^2 \\
& - 402x_5m_3^3m_4^2 + 279m_1m_3^3m_4^2 + 279m_2m_3^3m_4^2 + 21m_3^4m_4^2 - 459x_1^3m_4^3 \\
& - 1152x_1^2x_2m_4^3 - 1152x_1x_2^2m_4^3 - 459x_2^3m_4^3 - 1152x_1^2x_3m_4^3 \\
& - 2079x_1x_2x_3m_4^3 - 1152x_2^2x_3m_4^3 - 1152x_1x_3^2m_4^3 - 1152x_2x_3^2m_4^3 - 459x_3^3m_4^3 \\
& - 1152x_1^2x_4m_4^3 - 2079x_1x_2x_4m_4^3 - 1152x_2^2x_4m_4^3 - 2079x_1x_3x_4m_4^3 - 2079x_2x_3x_4m_4^3 \\
& - 1152x_3^2x_4m_4^3 - 1152x_1x_4^2m_4^3 - 1152x_2x_4^2m_4^3 - 1152x_3x_4^2m_4^3 - 459x_4^3m_4^3 \\
& - 1152x_1^2x_5m_4^3 - 2079x_1x_2x_5m_4^3 - 1152x_2^2x_5m_4^3 - 2079x_1x_3x_5m_4^3 - 2079x_2x_3x_5m_4^3 \\
& - 1152x_3^2x_5m_4^3 - 2079x_1x_4x_5m_4^3 - 2079x_2x_4x_5m_4^3 - 2079x_3x_4x_5m_4^3 - 1152x_4^2x_5m_4^3 - 1152x_1x_5^2m_4^3 \\
& - 1152x_2x_5^2m_4^3 - 1152x_3x_5^2m_4^3 - 1152x_4x_5^2m_4^3 - 459x_5^3m_4^3 + 798x_1^2m_1m_4^3 + 1458x_1x_2m_1m_4^3 \\
& + 798x_2^2m_1m_4^3 + 1458x_1x_3m_1m_4^3 + 1458x_2x_3m_1m_4^3 + 798x_3^2m_1m_4^3 + 1458x_1x_4m_1m_4^3 \\
& + 1458x_2x_4m_1m_4^3 + 1458x_3x_4m_1m_4^3 + 798x_4^2m_1m_4^3 + 1458x_1x_5m_1m_4^3 + 1458x_2x_5m_1m_4^3 \\
& + 1458x_3x_5m_1m_4^3 + 1458x_4x_5m_1m_4^3 + 798x_5^2m_1m_4^3 - 402x_1m_1^2m_4^3 - 402x_2m_1^2m_4^3 - 402x_3m_1^2m_4^3 \\
& - 402x_4m_1^2m_4^3 - 402x_5m_1^2m_4^3 + 54m_1^3m_4^3 + 798x_1^2m_2m_4^3 + 1458x_1x_2m_2m_4^3 + 798x_2^2m_2m_4^3 \\
& + 1458x_1x_3m_2m_4^3 + 1458x_2x_3m_2m_4^3 + 798x_3^2m_2m_4^3 + 1458x_1x_4m_2m_4^3 + 1458x_2x_4m_2m_4^3 \\
& + 1458x_3x_4m_2m_4^3 + 798x_4^2m_2m_4^3 + 1458x_1x_5m_2m_4^3 + 1458x_2x_5m_2m_4^3 + 1458x_3x_5m_2m_4^3 \\
& + 1458x_4x_5m_2m_4^3 + 798x_5^2m_2m_4^3 - 1002x_1m_1m_2m_4^3 - 1002x_2m_1m_2m_4^3 - 1002x_3m_1m_2m_4^3 \\
& - 1002x_4m_1m_2m_4^3 - 1002x_5m_1m_2m_4^3 + 279m_1^2m_2m_4^3 - 402x_1m_2^2m_4^3 \\
& - 402x_2m_2^2m_4^3 - 402x_3m_2^2m_4^3 - 402x_4m_2^2m_4^3 - 402x_5m_2^2m_4^3 + 279m_1m_2^2m_4^3 \\
& + 54m_2^3m_4^3 + 798x_1^2m_3m_4^3 + 1458x_1x_2m_3m_4^3 + 798x_2^2m_3m_4^3 + 1458x_1x_3m_3m_4^3 \\
& + 1458x_2x_3m_3m_4^3 + 798x_3^2m_3m_4^3 + 1458x_1x_4m_3m_4^3 + 1458x_2x_4m_3m_4^3 + 1458x_3x_4m_3m_4^3 \\
& + 798x_4^2m_3m_4^3 + 1458x_1x_5m_3m_4^3 + 1458x_2x_5m_3m_4^3 + 1458x_3x_5m_3m_4^3 + 1458x_4x_5m_3m_4^3 \\
& + 798x_5^2m_3m_4^3 - 1002x_1m_1m_3m_4^3 - 1002x_2m_1m_3m_4^3 - 1002x_3m_1m_3m_4^3 \\
& - 1002x_4m_1m_3m_4^3 - 1002x_5m_1m_3m_4^3 + 279m_1^2m_3m_4^3 - 1002x_1m_2m_3m_4^3 \\
& - 1002x_2m_2m_3m_4^3 - 1002x_3m_2m_3m_4^3 - 1002x_4m_2m_3m_4^3 - 1002x_5m_2m_3m_4^3 \\
& + 684m_1m_2m_3m_4^3 + 279m_2^2m_3m_4^3 - 402x_1m_3^2m_4^3 - 402x_2m_3^2m_4^3 - 402x_3m_3^2m_4^3 \\
& - 402x_4m_3^2m_4^3 - 402x_5m_3^2m_4^3 + 279m_1m_3^2m_4^3 + 279m_2m_3^2m_4^3 + 54m_3^3m_4^3 + 54x_1^2m_4^4
\end{aligned}$$

$$\begin{aligned}
&+99x_1x_2m_4^4+54x_2^2m_4^4+99x_1x_3m_4^4+99x_2x_3m_4^4+54x_3^2m_4^4+99x_1x_4m_4^4+99x_2x_4m_4^4 \\
&+99x_3x_4m_4^4+54x_4^2m_4^4+99x_1x_5m_4^4+99x_2x_5m_4^4+99x_3x_5m_4^4+99x_4x_5m_4^4 \\
&+54x_5^2m_4^4-72x_1m_1m_4^4-72x_2m_1m_4^4-72x_3m_1m_4^4-72x_4m_1m_4^4 \\
&-72x_5m_1m_4^4+21m_1^2m_4^4-72x_1m_2m_4^4-72x_2m_2m_4^4-72x_3m_2m_4^4 \\
&-72x_4m_2m_4^4-72x_5m_2m_4^4+51m_1m_2m_4^4+21m_2^2m_4^4-72x_1m_3m_4^4 \\
&-72x_2m_3m_4^4-72x_3m_3m_4^4-72x_4m_3m_4^4-72x_5m_3m_4^4+51m_1m_3m_4^4 \\
&+51m_2m_3m_4^4+21m_3^2m_4^4)
\end{aligned}$$