On the Ramanujan's mathematics applications: connections with ϕ and various equations regarding Teleparallel Equivalent of General Relativity. IV

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Abstract

In this paper we have described some applications of Ramanujan's mathematics and obtained some connections with ϕ and various expressions inherent Teleparallel Equivalent of General Relativity

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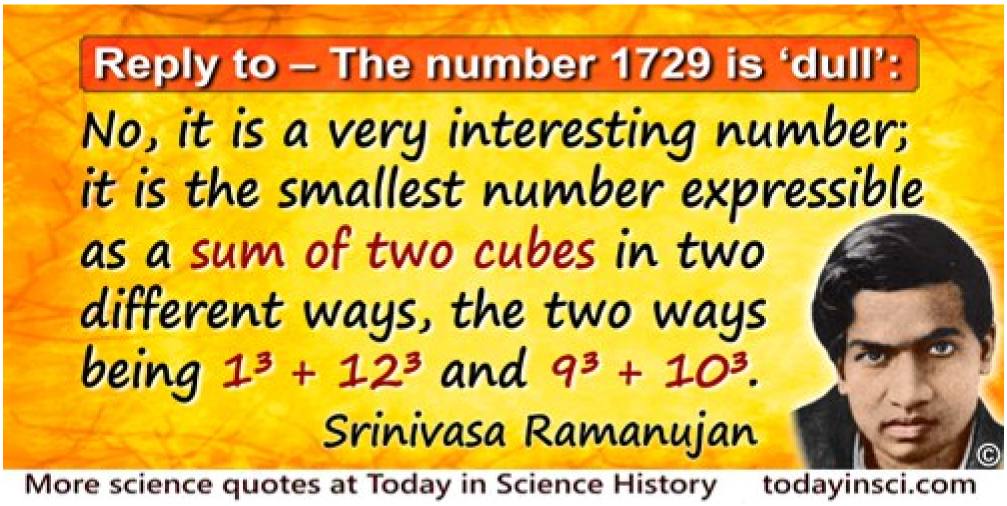
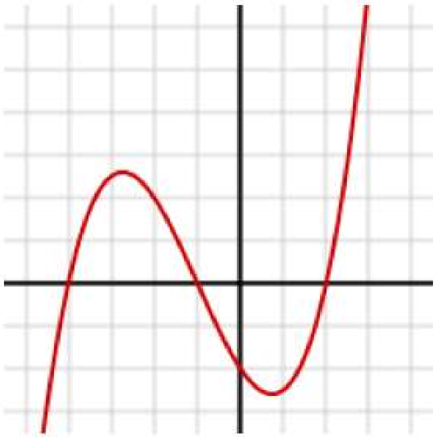
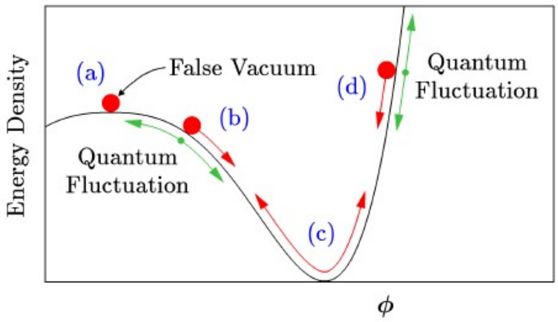


https://todayinsci.com/R/Ramanujan_Srinivasa/RamanujanSrinivasa-Quotations.htm





From:

Rotating and non-rotating AdS black holes in *f* (T) gravity non-linear electrodynamics - *Salvatore Capozziello, Gamal G.L. Nashed* (Dated: October 22, 2019) arXiv:1908.07381v2 [gr-qc] 19 Oct 2019

We have that:

ANTI-DE-SITTER BLACK HOLE SOLUTIONS IN NON-LINEAR ELECTRODYNAMICS

A. Asymptotically static AdS black holes

Considering the function (30) in (32), we get

$$\begin{aligned}
A(r) &= \Lambda_{eff} r^2 - \frac{4(d-3)^2 m q^2 P}{(d-2)a_1{}^2 c_1 r^{d-2} q_1{}^2 [e^{\frac{2q_1}{(d-3)mr^{d-3}}}+1]^2}\Big(2\sqrt{3P|a_2|}e^{\frac{q_1}{(d-3)mr^{d-3}}}[q_1\{e^{\frac{2q_1}{(d-3)mr^{d-3}}}-1\}+[1+e^{\frac{2q_1}{(d-3)mr^{d-3}}}](d-2)mr^{d-3})] \\
&+3a_1 q_1 r^{d-2}[e^{\frac{2q_1}{(d-3)mr^{d-3}}}+1]\Big) + \frac{q^2}{(d-2)a_1{}^2 c_1}\int \frac{8(d-3)^2 P\sqrt{3P|a_2|}(q_1{}^2-(d-2)m^2 r^{2(d-3)})e^{\frac{q_1}{(d-3)mr^{d-3}}}}{q_1{}^2 r^{2(d-2)}[e^{\frac{2q_1}{(d-3)mr^{d-3}}}+1]}dr + \frac{c_3}{r^{d-3}}, \\
&\approx \Lambda_{eff} r^2 - \frac{M}{r^{d-3}} + \frac{Q^2}{r^{2(d-3)}} + \frac{Q_1{}^4}{r^{(3d-8)}} + \frac{Q_2{}^4}{r^{4(d-3)}} + \cdots, \\
g(r) &= \frac{a_1{}^2 c_1 r^{2(d-2)}[e^{\frac{2q_1}{(d-3)mr^{d-3}}}+1]^2}{q^2(d-3)^2\{a_1 r^{d-2}[e^{\frac{2q_1}{(d-3)mr^{d-3}}}+1]-4\sqrt{3P|a_2|}e^{\frac{q_1}{(d-3)mr^{d-3}}}\}^2} \\
&\approx \frac{c_1}{(d-3)^2 q^2}\Big[1 + \frac{4(d-3)^2\sqrt{3P|a_2|}}{a_1 r^{d-2}} - \frac{2q_1{}^2\sqrt{3P|a_2|}}{a_1(d-3)^2 m^2 r^{3d-8}} - \frac{36Pa_2}{a_1{}^2 r^{2(d-2)}} + \cdots, \qquad (33)
\end{aligned}$$

For:

$q = 0.3$; $Q^2 = 0.135$; $Q_1{}^4 = 0.0519615$; $Q_2{}^4 = -0.020$; $\Lambda_{eff} = 0.375$

$\phi = -1/6$; $P = -0.5$; $a_2 = -0.5$; $d = 4$; $r = 5$; $q_1 = 0.2$; $m = 1$; $c_{1,2,3} = 1$

From:

$$M = c_3 - \frac{6(d-3)^2 P q^2}{q_1 a_1 c_1 (d-2)},$$

1-(((6*(-0.5)*0.3^2)))/(((0.2*2)))

$$1 - \frac{6 \times (-0.5) \times 0.3^2}{0.2 \times 2}$$

1.675

M = 1.675

$$\approx \Lambda_{eff} r^2 - \frac{M}{r^{d-3}} + \frac{Q^2}{r^{2(d-3)}} + \frac{Q_1{}^4}{r^{(3d-8)}} + \frac{Q_2{}^4}{r^{4(d-3)}} + \cdots,$$

0.375*25-1.675/5+0.135/25+0.0519615/5^4-0.020/5^4

Input interpretation:

$$0.375 \times 25 - \frac{1.675}{5} + \frac{0.135}{25} + \frac{0.0519615}{5^4} - \frac{0.02}{5^4}$$

Result:

9.0454511384

9.0454511384

From which:

(((0.375*25-1.675/5+0.135/25+0.0519615/5^4-0.020/5^4)))^1/4-2/10^3

Input interpretation:

$$\sqrt[4]{0.375 \times 25 - \frac{1.675}{5} + \frac{0.135}{25} + \frac{0.0519615}{5^4} - \frac{0.02}{5^4}} - \frac{2}{10^3}$$

Result:

1.732233...

1.732233…. $\approx \sqrt{3}$ that is the ratio between the gravitating mass M_0 and the Wheelerian mass q

$$M_0 = \sqrt{3q^2 - \Sigma^2},$$

$$q = \frac{(3\sqrt{3})\, M_s}{2}.$$

(see: Can massless wormholes mimic a Schwarzschild black hole in the strong field lensing? - arXiv:1909.13052v1 [gr-qc] 28 Sep 2019) and:

(((0.375*25-1.675/5+0.135/25+0.0519615/5^4-0.020/5^4)))^1/(Pi+sqrt2)-Pi/10^3

Input interpretation:

$$\sqrt[\pi+\sqrt{2}]{0.375\times 25-\frac{1.675}{5}+\frac{0.135}{25}+\frac{0.0519615}{5^4}-\frac{0.02}{5^4}}-\frac{\pi}{10^3}$$

Result:

1.61843...

1.61843…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$\sqrt[\pi+\sqrt{2}]{0.375\times 25-\frac{1.675}{5}+\frac{0.135}{25}+\frac{0.0519615}{5^4}-\frac{0.02}{5^4}}-\frac{\pi}{10^3}=$$
$$\sqrt[\pi+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}]{9.04545}-\frac{\pi}{1000} \quad \text{for } (\text{not } (z_0\in\mathbb{R} \text{ and } -\infty<z_0\leq 0))$$

$$\sqrt[\pi+\sqrt{2}]{0.375\times 25-\frac{1.675}{5}+\frac{0.135}{25}+\frac{0.0519615}{5^4}-\frac{0.02}{5^4}}-\frac{\pi}{10^3}=$$
$$\sqrt[\pi+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}]{9.04545}-\frac{\pi}{1000} \quad \text{for } (x\in\mathbb{R} \text{ and } x<0)$$

$$\sqrt[\pi+\sqrt{2}]{0.375\times 25-\frac{1.675}{5}+\frac{0.135}{25}+\frac{0.0519615}{5^4}-\frac{0.02}{5^4}}-\frac{\pi}{10^3}=$$
$$\sqrt[\pi+\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2(1+\lfloor\arg(2-z_0)/(2\pi)\rfloor)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}]{9.04545}-\frac{\pi}{1000}$$

Now, we have that:

$$\approx \frac{c_1}{(d-3)^2 q^2}\left[1 + \frac{4(d-3)^2\sqrt{3P|a_2|}}{a_1 r^{d-2}} - \frac{2q_1{}^2\sqrt{3P|a_2|}}{a_1(d-3)^2 m^2 r^{3d-8}} - \frac{36Pa_2}{a_1{}^2 r^{2(d-2)}} + \cdots,\right.$$

For:

$P = -0.5$; $a_2 = -0.5$; $d = 4$; $r = 5$; $q_1 = 0.2$; $m = 1$; $c_{1,2,3} = 1$

We obtain:

1/(0.2)^2*[1+(4*sqrt(3*0.5^2))/25-(2*0.2^2*sqrt(3*0.5^2))/(5^4)-(36*0.5^2)/(5^4)]

Input:

$$\frac{1}{0.2^2}\left(1+\frac{1}{25}\left(4\sqrt{3\times 0.5^2}\right)-\frac{2\times 0.2^2\sqrt{3\times 0.5^2}}{5^4}-\frac{36\times 0.5^2}{5^4}\right)$$

Result:

28.1013...

28.1013...

From which:

5*1/(0.2)^2*[1+(4*sqrt(3*0.5^2))/25-(2*0.2^2*sqrt(3*0.5^2))/(5^4)-(36*0.5^2)/(5^4)]-1

Input:

$$5\times\frac{1}{0.2^2}\left(1+\frac{1}{25}\left(4\sqrt{3\times 0.5^2}\right)-\frac{2\times 0.2^2\sqrt{3\times 0.5^2}}{5^4}-\frac{36\times 0.5^2}{5^4}\right)-1$$

Result:

139.507...

139.507… result practically equal to the rest mass of Pion meson 139.57 MeV

5*1/(0.2)^2*[1+(4*sqrt(3*0.5^2))/25-(2*0.2^2*sqrt(3*0.5^2))/(5^4)-(36*0.5^2)/(5^4)]-13-2

Input:

$$5 \times \frac{1}{0.2^2}\left(1+\frac{1}{25}\left(4\sqrt{3\times 0.5^2}\right)-\frac{2\times 0.2^2\sqrt{3\times 0.5^2}}{5^4}-\frac{36\times 0.5^2}{5^4}\right)-13-2$$

Result:

125.507...

125.507… result very near to the Higgs boson mass 125.18 GeV

27*1/2(((5*1/(0.2)^2*[1+(4*sqrt(3*0.5^2))/25-(2*0.2^2*sqrt(3*0.5^2))/(5^4)-(36*0.5^2)/(5^4)]-13+1/2)))+1

Input:

$$27 \times \frac{1}{2}\left(5 \times \frac{1}{0.2^2}\left(1+\frac{1}{25}\left(4\sqrt{3\times 0.5^2}\right)-\frac{2\times 0.2^2\sqrt{3\times 0.5^2}}{5^4}-\frac{36\times 0.5^2}{5^4}\right)-13+\frac{1}{2}\right)+1$$

Result:

1729.09...

1729.09…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

With regard 27 (From Wikipedia):

*"The fundamental group of the complex form, compact real form, or any algebraic version of E_6 is the cyclic group **Z**/3**Z**, and its outer automorphism group is the cyclic group **Z**/2**Z**. Its fundamental representation is 27-dimensional (complex), and a basis is given by the 27 lines on a cubic surface. The dual representation, which is inequivalent, is also 27-dimensional. In particle physics, E_6 plays a role in some grand unified theories".*

[27*1/2(((5*1/(0.2)^2*[1+(4*sqrt(3*0.5^2))/25-(2*0.2^2*sqrt(3*0.5^2))/(5^4)-(36*0.5^2)/(5^4)]-13+1/2))+1]^1/15-(21+5)1/10^3

Input:

$$\left(27\times\frac{1}{2}\left(5\times\frac{1}{0.2^2}\left(1+\frac{1}{25}\left(4\sqrt{3\times0.5^2}\right)-\frac{2\times0.2^2\sqrt{3\times0.5^2}}{5^4}-\frac{36\times0.5^2}{5^4}\right)-13+\frac{1}{2}\right)+1\right)\hat{}\,(1/15)-(21+5)\times\frac{1}{10^3}$$

Result:

1.617820920168714750240429307163106132695316232238940975787...

1.61782092016…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

$$\sqrt[15]{\frac{27}{2}\left(\frac{5\left(1+\frac{4\sqrt{3\times0.5^2}}{25}-\frac{2\times0.2^2\sqrt{3\times0.5^2}}{5^4}-\frac{36\times0.5^2}{5^4}\right)}{0.2^2}-13+\frac{1}{2}\right)+1}-\frac{21+5}{10^3}=1.61782$$

is 1.58168% smaller than

$$\sqrt[15]{\frac{27}{2}\left(\frac{5\left(1+\frac{4\sqrt{3\times0.5^2}}{25}-\frac{2\times0.2^2\sqrt{3\times0.5^2}}{5^4}-\frac{36\times0.5^2}{5^4}\right)}{0.2^2}-13+\frac{1}{2}\right)+1}=1.64382.$$

Now, we have that:

where κ is the surface gravity. The Hawking temperature associated with the black hole solution (33) is

$$T_{b_{Eq.(33)}}=\frac{1}{4\pi}\left\{(d-1)r_b\Lambda_{eff}-\frac{(d-3)Q^2}{r_b^{2d-5}}-\frac{(2d-5){Q_1}^4}{{r_b}^{(3d-7)}}+\frac{3(d-3){Q_2}^4}{{r_b}^{(4d-11)}}+\cdots\right\},$$

From

$$T_{b_{Eq.(33)}} = \frac{1}{4\pi}\left\{(d-1)r_b\Lambda_{eff} - \frac{(d-3)Q^2}{r_b^{2d-5}} - \frac{(2d-5){Q_1}^4}{{r_b}^{(3d-7)}} + \frac{3(d-3){Q_2}^4}{{r_b}^{(4d-11)}} + \cdots\right\},$$

For: $q = 0.3$; $Q^2 = 0.135$; ${Q_1}^4 = 0.0519615$; ${Q_2}^4 = -0.020$;

$\Lambda_{eff} = 0.375$; $r_b = 0.8$; $d = 4$;

We obtain:

1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]

Input interpretation:

$$\frac{1}{4\pi}\left(3\times0.8\times0.375 - \frac{0.135}{0.8^3} - \frac{3\times0.0519615}{0.8^5} + \frac{3\times(-0.02)}{0.8^5}\right)$$

Result:

-0.00179042...

-0.00179042…

Alternative representations:

$$\frac{3\times0.8\times0.375 - \frac{0.135}{0.8^3} - \frac{3\times0.0519615}{0.8^5} + \frac{3(-0.02)}{0.8^5}}{4\pi} = \frac{0.9 - \frac{0.135}{0.8^3} - \frac{0.215885}{0.8^5}}{720\,°}$$

$$\frac{3\times0.8\times0.375 - \frac{0.135}{0.8^3} - \frac{3\times0.0519615}{0.8^5} + \frac{3(-0.02)}{0.8^5}}{4\pi} = -\frac{0.9 - \frac{0.135}{0.8^3} - \frac{0.215885}{0.8^5}}{4\,i\log(-1)}$$

$$\frac{3\times0.8\times0.375 - \frac{0.135}{0.8^3} - \frac{3\times0.0519615}{0.8^5} + \frac{3(-0.02)}{0.8^5}}{4\pi} = \frac{0.9 - \frac{0.135}{0.8^3} - \frac{0.215885}{0.8^5}}{4\cos^{-1}(-1)}$$

Series representations:

$$\frac{3\times0.8\times0.375 - \frac{0.135}{0.8^3} - \frac{3\times0.0519615}{0.8^5} + \frac{3(-0.02)}{0.8^5}}{4\pi} = -\frac{0.00140619}{\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}}$$

$$\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}=-\frac{0.00281239}{-1+\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}}$$

$$\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}=-\frac{0.00562477}{\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Integral representations:

$$\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}=-\frac{0.00281239}{\int_0^{\infty}\frac{1}{1+t^2}\,dt}$$

$$\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}=-\frac{0.00140619}{\int_0^{1}\sqrt{1-t^2}\,dt}$$

$$\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}=-\frac{0.00281239}{\int_0^{\infty}\frac{\sin(t)}{t}\,dt}$$

From which:

-1/((((1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]))))

Input interpretation:

$$-\frac{1}{\frac{1}{4\pi}\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3\times(-0.02)}{0.8^5}\right)}$$

Result:

558.528…

558.528…

Alternative representations:

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = -\frac{1}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{720^\circ}}$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = -\frac{1}{-\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\, i \log(-1)}}$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = -\frac{1}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\cos^{-1}(-1)}}$$

Series representations:

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = 711.14 \sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = -355.57 + 355.57 \sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = 177.785 \sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}$$

Integral representations:

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = 355.57 \int_0^{\infty} \frac{1}{1+t^2}\, dt$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = 711.14 \int_0^{1} \sqrt{1-t^2}\, dt$$

$$-\frac{1}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}} = 355.57 \int_0^{\infty} \frac{\sin(t)}{t}\, dt$$

From the formula of coefficients of the '5th order' mock theta function $\psi_1(q)$: (A053261 OEIS Sequence)

sqrt(golden ratio) * exp(Pi*sqrt(n/15)) / (2*5^(1/4)*sqrt(n)) for n = 142, and subtracting 5, we obtain:

sqrt(golden ratio) * exp(Pi*sqrt(142/15)) / (2*5^(1/4)*sqrt(142)) - 5

Input:

$$\sqrt{\phi} \times \frac{\exp\left(\pi\sqrt{\frac{142}{15}}\right)}{2\sqrt[4]{5}\sqrt{142}} - 5$$

ϕ is the golden ratio

Exact result:

$$\frac{e^{\sqrt{142/15}\,\pi}\sqrt{\frac{\phi}{142}}}{2\sqrt[4]{5}} - 5$$

Decimal approximation:

557.9674901451270624093141698696704992272545861579538471347...

557.96749014…

Property:

$$-5 + \frac{e^{\sqrt{142/15}\,\pi}\sqrt{\frac{\phi}{142}}}{2\sqrt[4]{5}} \text{ is a transcendental number}$$

Alternate forms:

$$\frac{1}{4}\sqrt{\frac{1}{355}\left(5+\sqrt{5}\right)}\, e^{\sqrt{142/15}\,\pi} - 5$$

$$\frac{\sqrt{\frac{1}{71}\left(1+\sqrt{5}\right)}\, e^{\sqrt{142/15}\,\pi}}{4\sqrt[4]{5}} - 5$$

$$\frac{5^{3/4}\sqrt{71\left(1+\sqrt{5}\right)}\, e^{\sqrt{142/15}\,\pi} - 7100}{1420}$$

Series representations:

$$\frac{\sqrt{\phi}\,\exp\left(\pi\sqrt{\frac{142}{15}}\right)}{2\sqrt[4]{5}\,\sqrt{142}}-5=\left(-50\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(142-z_0)^k z_0^{-k}}{k!}+5^{3/4}\right.$$
$$\left.\exp\left(\pi\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(\frac{142}{15}-z_0\right)^k z_0^{-k}}{k!}\right)\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(\phi-z_0)^k z_0^{-k}}{k!}\right)\Big/$$
$$\left(10\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(142-z_0)^k z_0^{-k}}{k!}\right)\text{ for (not }(z_0\in\mathbb{R}\text{ and }-\infty<z_0\leq 0))$$

$$\frac{\sqrt{\phi}\,\exp\left(\pi\sqrt{\frac{142}{15}}\right)}{2\sqrt[4]{5}\,\sqrt{142}}-5=\left(-50\exp\left(i\pi\left\lfloor\frac{\arg(142-x)}{2\pi}\right\rfloor\right)\sum_{k=0}^{\infty}\frac{(-1)^k(142-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}+\right.$$
$$5^{3/4}\exp\left(i\pi\left\lfloor\frac{\arg(\phi-x)}{2\pi}\right\rfloor\right)\exp\left(\pi\exp\left(i\pi\left\lfloor\frac{\arg\left(\frac{142}{15}-x\right)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\left.\sum_{k=0}^{\infty}\frac{(-1)^k\left(\frac{142}{15}-x\right)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}\frac{(-1)^k(\phi-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\Big/$$
$$\left(10\exp\left(i\pi\left\lfloor\frac{\arg(142-x)}{2\pi}\right\rfloor\right)\sum_{k=0}^{\infty}\frac{(-1)^k(142-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\text{for }(x\in\mathbb{R}\text{ and }x<0)$$

$$\frac{\sqrt{\phi}\,\exp\left(\pi\sqrt{\frac{142}{15}}\right)}{2\sqrt[4]{5}\,\sqrt{142}}-5=\left(\left(\frac{1}{z_0}\right)^{-1/2\lfloor\arg(142-z_0)/(2\pi)\rfloor}z_0^{-1/2\lfloor\arg(142-z_0)/(2\pi)\rfloor}\right.$$
$$\left(-50\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(142-z_0)/(2\pi)\rfloor}z_0^{1/2\lfloor\arg(142-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(142-z_0)^k z_0^{-k}}{k!}+\right.$$
$$5^{3/4}\exp\left(\pi\left(\frac{1}{z_0}\right)^{1/2\left\lfloor\arg\left(\frac{142}{15}-z_0\right)/(2\pi)\right\rfloor}z_0^{1/2\left(1+\left\lfloor\arg\left(\frac{142}{15}-z_0\right)/(2\pi)\right\rfloor\right)}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(\frac{142}{15}-z_0\right)^k z_0^{-k}}{k!}\right)\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(\phi-z_0)/(2\pi)\rfloor}$$
$$\left.\left.z_0^{1/2\lfloor\arg(\phi-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(\phi-z_0)^k z_0^{-k}}{k!}\right)\right)\Big/$$
$$\left(10\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(142-z_0)^k z_0^{-k}}{k!}\right)$$

From which:

-1/4 /[1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]]

Input interpretation:

$$-\frac{1}{4\left(\frac{1}{4\pi}\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3\times(-0.02)}{0.8^5}\right)\right)}$$

Result:

139.632...

139.632… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternative representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=-\frac{1}{\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{720\,°}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=-\frac{1}{-\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{4\,i\log(-1)}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=-\frac{1}{\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{4\cos^{-1}(-1)}}$$

Series representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=177.785\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=-88.8925+88.8925\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}=44.4463\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}$$

Integral representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}} = 88.8925\int_0^\infty \frac{1}{1+t^2}\,dt$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}} = 177.785\int_0^1 \sqrt{1-t^2}\,dt$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}} = 88.8925\int_0^\infty \frac{\sin(t)}{t}\,dt$$

-1/4 /[1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]]-11-Pi

Input interpretation:

$$-\frac{1}{4\left(\frac{1}{4\pi}\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3\times(-0.02)}{0.8^5}\right)\right)}-11-\pi$$

Result:

125.490…

125.49… result very near to the Higgs boson mass 125.18 GeV

Alternative representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi = -11-180^\circ-\frac{1}{\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{720^\circ}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi = -11+i\log(-1)-\frac{1}{-\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{4\,i\log(-1)}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=$$

$$-11-\cos^{-1}(-1)-\frac{1}{\frac{4\left(0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}\right)}{4\cos^{-1}(-1)}}$$

Series representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-11+173.785\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-97.8925+86.8925\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-11+43.4463\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}$$

Integral representations:

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-11+86.8925\int_0^{\infty}\frac{1}{1+t^2}\,dt$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-11+173.785\int_0^{1}\sqrt{1-t^2}\,dt$$

$$-\frac{1}{\frac{\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}\right)4}{4\pi}}-11-\pi=-11+86.8925\int_0^{\infty}\frac{\sin(t)}{t}\,dt$$

((((-Pi/((((1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]))))))))-21-5+1/2

Input interpretation:

$$-\frac{\pi}{\frac{1}{4\pi}\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3\times(-0.02)}{0.8^5}\right)}-21-5+\frac{1}{2}$$

Result:

1729.17...

1729.17…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Alternative representations:

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-\frac{51}{2}-\frac{180\,°}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{720\,°}}$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-\frac{51}{2}+\frac{i\log(-1)}{-\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\,i\log(-1)}}$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-\frac{51}{2}-\frac{\cos^{-1}(-1)}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\cos^{-1}(-1)}}$$

Series representations:

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-25.5+2844.56\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^2$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=$$
$$-25.5+177.785\left(\sum_{k=0}^{\infty}\frac{2^{-k}\,(-6+50\,k)}{\binom{3\,k}{k}}\right)^2$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=$$
$$-25.5+711.14\sqrt{3}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{3}\right)^k}{1+2\,k}\right)^2$$

Integral representations:

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-25.5+711.14\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^2$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=$$
$$-25.5+2844.56\left(\int_0^{1}\sqrt{1-t^2}\,dt\right)^2$$

$$-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}=-25.5+711.14\left(\int_0^{\infty}\frac{\sin(t)}{t}\,dt\right)^2$$

[((((-Pi/((((1/(4Pi) [3*0.8*0.375-0.135/(0.8^3)-(3*0.0519615)/(0.8^5)+(3*-0.020)/(0.8^5)]))))))))-21-5+1/2]^1/15-(21+5)1/10^3

Input interpretation:

$$\sqrt[15]{-\frac{\pi}{\frac{1}{4\pi}\left(3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3\times(-0.02)}{0.8^5}\right)}-21-5+\frac{1}{2}}-(21+5)\times\frac{1}{10^3}$$

Result:

1.617825859704035485452539936147753103508858970162566796414...

1.6178258597…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Alternative representations:

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=-\frac{26}{10^3}+\sqrt[15]{-\frac{51}{2}-\frac{180^\circ}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{720^\circ}}}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=-\frac{26}{10^3}+\sqrt[15]{-\frac{51}{2}+\frac{i\log(-1)}{-\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\,i\log(-1)}}}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=-\frac{26}{10^3}+\sqrt[15]{-\frac{51}{2}-\frac{\cos^{-1}(-1)}{\frac{0.9-\frac{0.135}{0.8^3}-\frac{0.215885}{0.8^5}}{4\cos^{-1}(-1)}}}$$

Series representations:

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=-0.026+1.69929\sqrt[15]{-0.00896448+\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^2}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=$$
$$-\frac{13}{500}+\sqrt[15]{-\frac{51}{2}+711.14\left(-1+\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}\right)^2}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=$$
$$-0.026+1.41251\sqrt[15]{-0.143432+\left(\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}\right)^2}$$

Integral representations:

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=$$
$$-\frac{13}{500}+\sqrt[15]{-25.5+711.14\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^2}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=$$
$$-\frac{13}{500}+\sqrt[15]{-25.5+2844.56\left(\int_0^{1}\sqrt{1-t^2}\,dt\right)^2}$$

$$\sqrt[15]{-\frac{\pi}{\frac{3\times 0.8\times 0.375-\frac{0.135}{0.8^3}-\frac{3\times 0.0519615}{0.8^5}+\frac{3(-0.02)}{0.8^5}}{4\pi}}-21-5+\frac{1}{2}}-\frac{21+5}{10^3}=$$
$$-\frac{13}{500}+\sqrt[15]{-25.5+711.14\left(\int_0^{\infty}\frac{\sin(t)}{t}\,dt\right)^2}$$

Now, we have that:

Let us now calculate the heat capacity $C_b h$ horizon and substitute Eqs. (45) and (48) into Eq. (44). We have

$$C_{b_{Eq.(33)}} \approx -4\pi r_b^2 - \frac{288\pi(d-2)\alpha P}{r_b^{d-2}} + \frac{576\pi(d-2)\alpha P\sqrt{3P|\alpha|}}{r_b^{2(d-2)}} + \frac{288\pi(2d-5)\alpha q_1^2 P}{(d-3)^2 m^2 r_b^{(3d-8)}}.$$

From:

$$C_{b_{Eq.(33)}} \approx -4\pi r_b^2 - \frac{288\pi(d-2)\alpha P}{r_b^{d-2}} + \frac{576\pi(d-2)\alpha P\sqrt{3P|\alpha|}}{r_b^{2(d-2)}} + \frac{288\pi(2d-5)\alpha q_1^2 P}{(d-3)^2 m^2 r_b^{(3d-8)}}.$$

For: P = 0.5; a_2 = -0.5 ; d = 4; r = 5; q_1 = 0.2; m = 1; $c_{1,2,3}$ = 1 ,

we obtain:

-4*Pi*0.8^2-(288*Pi*2*(0.5))/(0.8^2)+(576*Pi*2*(0.5)*sqrt(3*0.5))/(0.8^4)+(288*Pi*3*0.2^2*0.5)/(0.8^4)

Input:

$$-4\pi\times 0.8^2 - \frac{288\,\pi\times 2\times 0.5}{0.8^2} + \frac{576\,\pi\times 2\times 0.5\,\sqrt{3\times 0.5}}{0.8^4} + \frac{288\,\pi\times 3\times 0.2^2\times 0.5}{0.8^4}$$

Result:

4121.53…

4121.53…

Series representations:

$$-4\pi\,0.8^2 - \frac{288\,\pi\,2\times 0.5}{0.8^2} + \frac{576\left(\pi\,2\times 0.5\sqrt{3\times 0.5}\right)}{0.8^4} + \frac{288\left(\pi\,3\times 0.2^2\times 0.5\right)}{0.8^4} = -410.372\,\pi + 1406.25\,\pi\sum_{k=0}^{\infty}\frac{(-0.5)^k\left(-\frac{1}{2}\right)_k}{k!}$$

$$-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\left(\pi\, 2\times 0.5\sqrt{3\times 0.5}\right)}{0.8^4} + \frac{288\left(\pi\, 3\times 0.2^2\times 0.5\right)}{0.8^4} = -410.372\,\pi - \frac{703.125\,\pi \sum_{j=0}^{\infty} \operatorname{Res}_{s=-j} e^{0.693147\,s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{\sqrt{\pi}}$$

$$-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\left(\pi\, 2\times 0.5\sqrt{3\times 0.5}\right)}{0.8^4} + \frac{288\left(\pi\, 3\times 0.2^2\times 0.5\right)}{0.8^4} = -410.372\,\pi + 1406.25\,\pi\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k (1.5-z_0)^k\, z_0^{-k}}{k!}$$

for (not ($z_0 \in \mathbb{R}$ and $-\infty < z_0 \le 0$))

2(((-4*Pi*0.8^2-(288*Pi*2*(0.5))/(0.8^2)+(576*Pi*2*(0.5)*sqrt(3*0.5))/(0.8^4)+(288*Pi*3*0.2^2*0.5)/(0.8^4))))^1/2-Pi

Input:

$$2\sqrt{-4\pi\times 0.8^2 - \frac{288\,\pi\times 2\times 0.5}{0.8^2} + \frac{576\,\pi\times 2\times 0.5\sqrt{3\times 0.5}}{0.8^4} + \frac{288\,\pi\times 3\times 0.2^2\times 0.5}{0.8^4}} - \pi$$

Result:

125.257…

125.257… result very near to the Higgs boson mass 125.18 GeV

Series representations:

$$2\sqrt{-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\left(\pi\, 2\times 0.5\sqrt{3\times 0.5}\right)}{0.8^4} + \frac{288\left(\pi\, 3\times 0.2^2\times 0.5\right)}{0.8^4}} - \pi = -\pi + 2\sqrt{\pi\left(-410.372 + 1406.25\sum_{k=0}^{\infty}\frac{(-0.5)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

$$2\sqrt{-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\left(\pi\, 2\times 0.5\sqrt{3\times 0.5}\right)}{0.8^4} + \frac{288\left(\pi\, 3\times 0.2^2\times 0.5\right)}{0.8^4}} - \pi = -\pi + 2\sqrt{\pi\left(-410.372 - \frac{703.125\sum_{j=0}^{\infty} \operatorname{Res}_{s=-j} e^{0.693147\,s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{\sqrt{\pi}}\right)}$$

$$2\sqrt{-4\pi\,0.8^2-\frac{288\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}}-\pi=$$

$$-\pi+2\sqrt{\pi\left(-410.372+1406.25\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(1.5-z_0)^k z_0^{-k}}{k!}\right)}$$

for (not ($z_0\in\mathbb{R}$ and $-\infty<z_0\leq0$))

2(((-4*Pi*0.8^2-(288*Pi*2*(0.5))/(0.8^2)+(576*Pi*2*(0.5)*sqrt(3*0.5))/(0.8^4)+(288*Pi*3*0.2^2*0.5)/(0.8^4))))^1/2+11

Input:

$$2\sqrt{-4\pi\times0.8^2-\frac{288\pi\times2\times0.5}{0.8^2}+\frac{576\pi\times2\times0.5\sqrt{3\times0.5}}{0.8^4}+\frac{288\pi\times3\times0.2^2\times0.5}{0.8^4}}+11$$

Result:

139.398…

139.398… result practically equal to the rest mass of Pion meson 139.57 MeV

Series representations:

$$2\sqrt{-4\pi\,0.8^2-\frac{288\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}}+11=$$

$$11+2\sqrt{\pi\left(-410.372+1406.25\sum_{k=0}^{\infty}\frac{(-0.5)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

$$2\sqrt{-4\pi\,0.8^2-\frac{288\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}}+11=$$

$$11+2\sqrt{\pi\left(-410.372-\frac{703.125\sum_{j=0}^{\infty}\operatorname{Res}_{s=-j}e^{0.693147\,s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{\sqrt{\pi}}\right)}$$

$$2\sqrt{-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\,(\pi\, 2\times 0.5\,\sqrt{3\times 0.5}\,)}{0.8^4} + \frac{288\,(\pi\, 3\times 0.2^2\times 0.5)}{0.8^4}} + 11 =$$

$$11 + 2\sqrt{\pi\left(-410.372 + 1406.25\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k (1.5-z_0)^k z_0^{-k}}{k!}\right)}$$

for (not ($z_0 \in \mathbb{R}$ and $-\infty < z_0 \leq 0$))

-4-1/3+27*(((-4*Pi*0.8^2-(288*Pi*2*(0.5))/(0.8^2)+(576*Pi*2*(0.5)*sqrt(3*0.5))/(0.8^4)+(288*Pi*3*0.2^2*0.5)/(0.8^4))))^1/2

Input:

$$-4 - \frac{1}{3} + 27\sqrt{-4\,\pi\times 0.8^2 - \frac{288\,\pi\times 2\times 0.5}{0.8^2} + \frac{576\,\pi\times 2\times 0.5\sqrt{3\times 0.5}}{0.8^4} + \frac{288\,\pi\times 3\times 0.2^2\times 0.5}{0.8^4}}$$

Result:

1729.04...

1729.04…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Series representations:

$$-4 - \frac{1}{3} + 27\sqrt{-4\pi\, 0.8^2 - \frac{288\,\pi\, 2\times 0.5}{0.8^2} + \frac{576\,(\pi\, 2\times 0.5\,\sqrt{3\times 0.5}\,)}{0.8^4} + \frac{288\,(\pi\, 3\times 0.2^2\times 0.5)}{0.8^4}} =$$

$$-\frac{13}{3} + 27\sqrt{\pi\left(-410.372 + 1406.25\sum_{k=0}^{\infty}\frac{(-0.5)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

$$-4-\frac{1}{3}+27\sqrt{-4\pi\,0.8^2-\frac{288\,\pi\,2\times 0.5}{0.8^2}+\frac{576\,(\pi\,2\times 0.5\sqrt{3\times 0.5})}{0.8^4}+\frac{288\,(\pi\,3\times 0.2^2\times 0.5)}{0.8^4}}=$$

$$-\frac{13}{3}+27\sqrt{\pi\left(-410.372-\frac{703.125\sum_{j=0}^{\infty}\operatorname{Res}_{s=-j}e^{0.693147\,s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{\sqrt{\pi}}\right)}$$

$$-4-\frac{1}{3}+27\sqrt{-4\pi\,0.8^2-\frac{288\,\pi\,2\times 0.5}{0.8^2}+\frac{576\,(\pi\,2\times 0.5\sqrt{3\times 0.5})}{0.8^4}+\frac{288\,(\pi\,3\times 0.2^2\times 0.5)}{0.8^4}}$$

$$=-\frac{13}{3}+27\sqrt{\pi\left(-410.372+1406.25\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(1.5-z_0)^k\,z_0^{-k}}{k!}\right)}$$

for (not ($z_0\in\mathbb{R}$ and $-\infty<z_0\leq 0$))

((((-4-1/3+27*(((-4*Pi*0.8^2-(288*Pi*2*(0.5))/(0.8^2)+(576*Pi*2*(0.5)*sqrt(3*0.5))/(0.8^4)+(288*Pi*3*0.2^2*0.5)/(0.8^4))))^1/2))))^1/15-(21+5)1/10^3

Input:

$$\left(-4-\frac{1}{3}+27\sqrt{\left(-4\pi\times 0.8^2-\frac{288\,\pi\times 2\times 0.5}{0.8^2}+\frac{576\,\pi\times 2\times 0.5\sqrt{3\times 0.5}}{0.8^4}+\frac{288\,\pi\times 3\times 0.2^2\times 0.5}{0.8^4}\right)}\right)^{\wedge}(1/15)-(21+5)\times\frac{1}{10^3}$$

Result:

1.617818039608387419045008778173615872002417065323599984195...

1.617818039…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$\left(-4-\frac{1}{3}+27\sqrt{\left(-4\pi\,0.8^2-\frac{288\,\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}\right)}\right)\wedge(1/15)-\frac{21+5}{10^3}=$$

$$-\frac{13}{500}+\sqrt[15]{-\frac{13}{3}+27\sqrt{\pi\left(-410.372+1406.25\sum_{k=0}^{\infty}\frac{(-0.5)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}}$$

$$\left(-4-\frac{1}{3}+27\sqrt{\left(-4\pi\,0.8^2-\frac{288\,\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}\right)}\right)\wedge(1/15)-\frac{21+5}{10^3}=$$

$$-\frac{13}{500}+\sqrt[15]{-\frac{13}{3}+27\sqrt{\pi\left(-410.372-\frac{703.125\sum_{j=0}^{\infty}\text{Res}_{s=-j}\,e^{0.693147\,s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{\sqrt{\pi}}\right)}}$$

$$\left(-4-\frac{1}{3}+27\sqrt{\left(-4\pi\,0.8^2-\frac{288\,\pi\,2\times0.5}{0.8^2}+\frac{576\left(\pi\,2\times0.5\sqrt{3\times0.5}\right)}{0.8^4}+\frac{288\left(\pi\,3\times0.2^2\times0.5\right)}{0.8^4}\right)}\right)\wedge(1/15)-\frac{21+5}{10^3}=-\frac{13}{500}+$$

$$\sqrt[15]{-\frac{13}{3}+27\sqrt{\pi\left(-410.372+1406.25\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(1.5-z_0)^k\,z_0^{-k}}{k!}\right)}}$$

for (not ($z_0\in\mathbb{R}$ and $-\infty<z_0\le 0$))

From:

Charged Anti-de Sitter BTZ black holes in Maxwell-f(T) gravity
G. G. L. Nashed and S. Capozziello - arXiv:1710.06620v2 [gr-qc] 14 Apr 2018

We have that:

c_4, c_5 and c_6 are integration constants.

The first two sets of the charged solution (24) are the same as the two sets of the non-charged solution. The metric of the third set of Eq. (24) takes the form

$$ds_3{}^2 = \frac{r^3[c_5{}^6 - 2c_6{}^2] - 4c_5{}^3 - 12r\epsilon c_4 c_5{}^2 - 2rc_5{}^4 - 6rc_5{}^4 \ln r}{2r} dt^2 - \frac{12c_5{}^2\epsilon(rc_5 - 1)^2}{r(r^3c_5{}^4 - 4c_5 - 12r\epsilon c_4 - 2rc_5{}^2 - 6rc_5{}^2 \ln r)} dr^2 - r^2 d\phi^2 - 2r^2 c_6 dt d\phi. \tag{31}$$

From:

$$ds_3{}^2 = \frac{r^3[c_5{}^6 - 2c_6{}^2] - 4c_5{}^3 - 12r\epsilon c_4 c_5{}^2 - 2rc_5{}^4 - 6rc_5{}^4 \ln r}{2r} dt^2 - \frac{12c_5{}^2\epsilon(rc_5 - 1)^2}{r(r^3c_5{}^4 - 4c_5 - 12r\epsilon c_4 - 2rc_5{}^2 - 6rc_5{}^2 \ln r)} dr^2 - r^2 d\phi^2 - 2r^2 c_6 dt d\phi.$$

For r = 5; c_4 = 1; c_5 = 2; c_6 = 3 and ϵ = 1/12 , we obtain:

(((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10

$$\frac{1}{10}\left(5^3\left(2^6 - 2\times 3^2\right) - 4\times 2^3 - 12\times 5\times \frac{1}{12}\times 2^2 - 2\times 5\times 2^4 - \left(6\times 5\times 2^4\right)\log(5)\right)$$

$$\frac{1}{10}(5538 - 480\log(5))$$

476.546980203163182019163552005142993302771134995111149348 1...

(((12*2^2*1/12(5*2-1)^2))) / ((5(((5^3*2^4-4*2-12*5*1/12-2*5*2^2-6*5*2^2 ln(5))))))

Input:

$$\frac{12\times 2^2\times \frac{1}{12}(5\times 2 - 1)^2}{5\left(5^3\times 2^4 - 4\times 2 - 12\times 5\times \frac{1}{12} - 2\times 5\times 2^2 - \left(6\times 5\times 2^2\right)\log(5)\right)}$$

log(x) is the natural logarithm

Exact result:

$$\frac{324}{5(1947 - 120\log(5))}$$

Decimal approximation:

0.036946919780759010909767187294784679543447276664345434557...

0.03694691978…..

Property:

$\frac{324}{5\,(1947 - 120 \log(5))}$ is a transcendental number

Thence, we obtain:

(((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759

Input interpretation:

$$\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times \frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.036946919780759$$

log(x) is the natural logarithm

Result:

476.510033283382423...

476.51003….

Alternative representations:

$$\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000 = -0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

$$\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000 = -0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

$$\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000 = -0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

Series representations:

$$\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.036946919780759000 = 553.76305308021924 - 48.0000000000000000\log(4)+48.0000000000000000\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}$$

$$\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.036946919780759000 = 553.76305308021924 - 96.0000000000000000\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-48.0000000000000000\log(x)+48.0000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.036946919780759000 = 553.763053080219241000 - 48\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-48\log(z_0)-48\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log(z_0)+48\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.036946919780759000 = 553.76305308021924 - 48.0000000000000000\int_1^5\frac{1}{t}\,dt$$

$$\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.036946919780759000 = 553.7630530802192 - \frac{24.000000000000000}{i\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\quad\text{for } -1<\gamma<0$$

Pi*(((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759))))+144+89-1

Input interpretation:

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times\frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.036946919780759\right)+144+89-1$$

log(x) is the natural logarithm

Result:

1729.00041992490208...

1729.0004….

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Alternative representations:

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1=232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1=232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\,(5\times 2^4)\right)-0.0369469197807590000\right)+144+89-1=232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

Series representations:

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\,(5\times 2^4)\right)-0.0369469197807590000\right)+144+89-1=232.000000000000000+553.76305308021924\,\pi-48.0000000000000000\,\pi\log(4)+48.0000000000000000\,\pi\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}$$

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\,(5\times 2^4)\right)-0.0369469197807590000\right)+144+89-1=232.000000000000000+553.76305308021924\,\pi-96.0000000000000000\,i\,\pi^2\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-48.0000000000000000\,\pi\log(x)+48.0000000000000000\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\,(5\times 2^4)\right)-0.0369469197807590000\right)+144+89-1=232+553.7630530802192410000\,\pi-48\,\pi\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-48\,\pi\log(z_0)-48\,\pi\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log(z_0)+48\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1 = 232.000000000000000+553.76305308021924\,\pi-48.0000000000000000\,\pi\int_1^5 \frac{1}{t}\,dt$$

$$\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1 = 232.00000000000000+553.7630530802192\,\pi-\frac{24.000000000000000}{i}\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

(((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5)))))/10 - 0.036946919780759))))+21

Input interpretation:

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times\frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.036946919780759\right)+21$$

log(x) is the natural logarithm

Result:

497.510033283382423...

497.51003…. result practically equal to the rest mass of Kaon meson 497.614

Alternative representations:

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21 = 20.9630530802192410000+\frac{1}{10}\left(-32-10\times 2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21=20.9630530802192410000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21=20.9630530802192410000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)$$

Series representations:

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21=574.76305308021924100-48.0000000000000000000\log(4)+48.0000000000000000000\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}$$

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21=574.76305308021924100-96.000000000000000000\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-48.000000000000000000\log(x)+48.000000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+21=574.7630530802192410000-48\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-48\log(z_0)-48\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log(z_0)+48\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-z_0)^k\,z_0^{-k}}{k}$$

Integral representations:

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\,(5\times2^4)\right)-0.0369469197807590000\right)+21 = 574.76305308021924100-48.0000000000000000000\int_1^5\frac{1}{t}\,dt$$

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\,(5\times2^4)\right)-0.0369469197807590000\right)+21 = 574.7630530802192410-\frac{24.0000000000000000}{i\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

1/Pi(((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759))))-7-3-2

Input interpretation:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-12\times5\times\frac{1}{12}\times2^2-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.036946919780759\right)-7-3-2$$

log(x) is the natural logarithm

Result:

139.677854459867764...

139.677854…. result practically equal to the rest mass of Pion meson 139.57 MeV

Alternative representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12}{12}\left(5\times2^2\right)-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2 = -12+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

Series representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{48.0000000000000000\log(4)}{\pi}+\frac{48.0000000000000000\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}}{\pi}$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12.0000000000000000+\frac{553.76305308021924}{\pi}-96.000000000000000\,i\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-\frac{48.000000000000000\log(x)}{\pi}+\frac{48.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}}{\pi}\quad\text{for } x<0$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12}{12}\left(5\times2^2\right)-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12.0000000000000000+\frac{553.76305308021924}{\pi}-96.000000000000000\,i\left\lfloor-\frac{-\pi+\arg\left(\frac{5}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor-\frac{48.000000000000000\log(z_0)}{\pi}+\frac{48.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}}{\pi}$$

Integral representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12}{12}\left(5\times2^2\right)-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=-12.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{48.0000000000000000}{\pi}\int_1^5\frac{1}{t}\,dt$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12}{12}\left(5\times2^2\right)-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.0369469197807590000\right)-7-3-2=$$
$$-12.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{24.0000000000000000}{i\pi^2}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\quad\text{for }-1<\gamma<0$$

1/Pi(((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759))))-21-5

Input interpretation:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-12\times5\times\frac{1}{12}\times2^2-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)-0.036946919780759\right)-21-5$$

log(x) is the natural logarithm

Result:

125.677854459867764...

125.677854…. result very near to the Higgs boson mass 125.18 GeV

Alternative representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5=-26+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5=-26+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5=-26+\frac{1}{\pi}\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)$$

Series representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5=-26.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{48.0000000000000000\log(4)}{\pi}+\frac{48.0000000000000000\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}}{\pi}$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5=-26.000000000000000+\frac{553.76305308021924}{\pi}-96.000000000000000\,i\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-\frac{48.000000000000000\log(x)}{\pi}+\frac{48.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}}{\pi}\quad\text{for } x<0$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5 = -26.000000000000000+\frac{553.76305308021924}{\pi}-96.000000000000000\, i\left\lfloor -\frac{-\pi+\arg\left(\frac{5}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor - \frac{48.000000000000000\log(z_0)}{\pi}+\frac{48.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}}{\pi}$$

Integral representations:

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5 = -26.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{48.0000000000000000}{\pi}\int_1^5\frac{1}{t}\,dt$$

$$\frac{1}{\pi}\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12}{12}\left(5\times 2^2\right)-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.0369469197807590000\right)-21-5 = -26.0000000000000000+\frac{553.76305308021924}{\pi}-\frac{24.0000000000000000}{i\pi^2}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

[Pi*(((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759))))+144+89-1]^1/15-(21+5)1/10^3

Input interpretation:

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times\frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)-0.036946919780759\right)+144+89-1\right)\hat{}\,(1/15)-(21+5)\times\frac{1}{10^3}$$

$\log(x)$ is the natural logarithm

Result:

1.617815255364454783...

1.6178152553644…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Alternative representations:

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\text{^}(1/15)-\frac{21+5}{10^3}=-\frac{26}{10^3}+\left(232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log_e(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)\right)\text{^}(1/15)$$

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\text{^}(1/15)-\frac{21+5}{10^3}=-\frac{26}{10^3}+\left(232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4-30\log(a)\log_a(5)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)\right)\text{^}(1/15)$$

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-\frac{12\times 5\times 2^2}{12}-2\times 5\times 2^4-\log(5)\,6\left(5\times 2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\text{^}(1/15)-\frac{21+5}{10^3}=-\frac{26}{10^3}+\left(232+\pi\left(-0.0369469197807590000+\frac{1}{10}\left(-32-10\times 2^4+30\,\mathrm{Li}_1(-4)\,2^4+\left(-18+2^6\right)5^3-\frac{240}{12}\right)\right)\right)\text{^}(1/15)$$

Series representations:

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\wedge(1/15)-\frac{21+5}{10^3}=-\frac{13}{500}+\left(232.0000000000000000000+\pi\,(553.763053080219241000-48.0000000000000000000\log(4))+48.0000000000000000000\,\pi\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}\right)\wedge(1/15)$$

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\wedge(1/15)-\frac{21+5}{10^3}=-\frac{13}{500}+\left(232.0000000000000000000+553.763053080219241000\,\pi-96.0000000000000000000\,i\,\pi^2\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-48.0000000000000000000\,\pi\log(x)+48.0000000000000000000\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\right)\wedge(1/15)\quad\text{for } x<0$$

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\wedge(1/15)-\frac{21+5}{10^3}=-\frac{13}{500}+\left(232+\pi\left(553.7630530802192410000-48\left(\log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}\right)\right)\right)\wedge(1/15)$$

Integral representations:

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\wedge(1/15)-\frac{21+5}{10^3}=-\frac{13}{500}+\sqrt[15]{232+553.7630530802192410000\,\pi-48\,\pi\int_1^5\frac{1}{t}\,dt}$$

$$\left(\pi\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-\frac{12\times5\times2^2}{12}-2\times5\times2^4-\log(5)\,6\left(5\times2^4\right)\right)-0.0369469197807590000\right)+144+89-1\right)\text{^}(1/15)-\frac{21+5}{10^3}=$$

$$-\frac{13}{500}+\sqrt[15]{232+553.7630530802192410000\,\pi-\frac{24}{i}\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}$$

for $-1<\gamma<0$

$\Gamma(x)$ is the gamma function

We have also:

$$dr^2-r^2d\phi^2-2r^2c_6dtd\phi.$$

For r = 5, c_6 = 3 , we obtain:

Input interpretation:

$$\frac{\partial 25}{\partial x}-25\times\frac{\partial\left(x^2-2\times25\times3\right)}{\partial x}\,x'(x)$$

Result:

$-50\,x$

For x = 1; -50

Thence:

((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759*(partial derivative 25))))- 25 partial derivative x^2 - 2*25*3 partial derivative x

Input interpretation:

$$\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-12\times5\times\frac{1}{12}\times2^2-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)+\frac{\partial 25}{\partial x}\times(-0.036946919780759)\right)\times\frac{\partial(-25)}{\partial x}\,x^2-(2\times25\times3)\,x'(x)$$

$\log(x)$ is the natural logarithm

Exact result:

-150

-150

From which:

-(([((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759*(partial derivative 25))))- 25 partial derivative x^2 - 2*25*3 partial derivative x]+11-1/golden ratio))

Input interpretation:

$$-\left(\left(\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-12\times5\times\frac{1}{12}\times2^2-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)+\frac{\partial 25}{\partial x}\times(-0.036946919780759)\right)\times\frac{\partial(-25)}{\partial x}x^2-(2\times25\times3)\,x'(x)\right)+11-\frac{1}{\phi}\right)$$

log(x) is the natural logarithm

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+139$$

Decimal approximation:

139.61803398874989484820458683436563811772030917980576286213...

139.61803398…. result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{139\,\phi+1}{\phi}$$

$$\frac{1}{2}\left(277+\sqrt{5}\right)$$

$$\frac{\sqrt{5}}{2}+\frac{277}{2}$$

-(([((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759*(partial derivative 25))))- 25 partial derivative x^2 - 2*25*3 partial derivative x]+18+7-1/golden ratio))

Input interpretation:

$$-\left(\left(\left(\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times \frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)+\frac{\partial 25}{\partial x}\times(-0.036946919780759)\right)\times \frac{\partial(-25)}{\partial x}x^2-(2\times 25\times 3)\,x'(x)\right)+18+7-\frac{1}{\phi}\right)$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+125$$

Decimal approximation:

125.61803398874989484820458683436563811772030917980576286213...

125.61803398… result very near to the Higgs boson mass 125.18 GeV

Alternate forms:

$$\frac{125\,\phi+1}{\phi}$$

$$\frac{1}{2}\left(249+\sqrt{5}\right)$$

$$\frac{\sqrt{5}}{2}+\frac{249}{2}$$

27*1/2*-(([((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759*(partial derivative 25))))- 25 partial derivative x^2 - 2*25*3 partial derivative x]+18+4))+1

Input interpretation:

$$27\times\frac{1}{2}\times(-1)\left(\left(\left(\left(\frac{1}{10}\left(5^3\left(2^6-2\times 3^2\right)-4\times 2^3-12\times 5\times \frac{1}{12}\times 2^2-2\times 5\times 2^4-\left(6\times 5\times 2^4\right)\log(5)\right)+\frac{\partial 25}{\partial x}\times(-0.036946919780759)\right)\times \frac{\partial(-25)}{\partial x}x^2-(2\times 25\times 3)\,x'(x)\right)+18+4\right)+1$$

$\log(x)$ is the natural logarithm

Exact result:

1729

1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

[27*1/2*-(([((((((5^3(2^6-2*3^2)-4*2^3-12*5*1/12*2^2-2*5*2^4-6*5*2^4 ln(5))))/10 - 0.036946919780759*(partial deriv 25))))- 25 partial deriv x^2 - 2*25*3 partial deriv x]+18+4))+1]^1/15-(21+5)/10^3

Input interpretation:

$$\left(27\times\frac{1}{2}\times(-1)\left(\left(\left(\left(\frac{1}{10}\left(5^3\left(2^6-2\times3^2\right)-4\times2^3-12\times5\times\frac{1}{12}\times2^2-2\times5\times2^4-\left(6\times5\times2^4\right)\log(5)\right)+\frac{\partial 25}{\partial x}\times(-0.036946919780759)\right)\times\frac{\partial(-25)}{\partial x}\,x^2-(2\times25\times3)\,x'(x)\right)+18+4\right)+1\right)\hat{}\,(1/15)-\frac{21+5}{10^3}$$

log(x) is the natural logarithm

Result:

$$\sqrt[15]{1729}-\frac{13}{500}$$

Decimal approximation:

1.617815228748728130580088031324769514329283143699940172645...

1.617815228748….. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Alternate forms:

$$\frac{1}{500}\left(500\sqrt[15]{1729}-13\right)$$

$$\frac{1}{500}\left(\left(500\ \boxed{\begin{array}{l}\text{root of}\\ 31\,250\,000\,000\,000\,x^5+686\,562\,500\,000\,000\,x^4+6\,033\,511\,250\,000\,000\,x^3+\\ 26\,511\,248\,432\,500\,000\,x^2+58\,245\,212\,806\,202\,500\,x-\\ 52\,764\,892\,578\,124\,999\,999\,999\,999\,948\,814\,106\,985\,909\,243\\ \text{near } x=1.11045\times10^6\end{array}}+2197\right)\text{^}(1/3)-13\right)$$

We have that:

$$\nabla_\alpha T^\alpha = \frac{13{c_5}^2 + 12\,|\epsilon|\,c_4 + 6{c_5}^2\ln r - 6r{c_5}^3 - 6r^2{c_5}^4 + 4r^3{c_5}^5}{6{c_5}^2\,|\epsilon|\,(rc_5-1)^3} \sim \left(\frac{1}{r}\right),$$

For: $r = 5$; $c_4 = 1$; $c_5 = 2$; $c_6 = 3$ and $\epsilon = 1/12$, we obtain:

((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))

Input:

$$\frac{13\times2^2+12\times\frac{1}{12}+6\times2^2\log(5)-6\times5\times2^3-6\times25\times2^4+4\times5^3\times2^5}{6\times2^2\times\frac{1}{12}(5\times2-1)^3}$$

$\log(x)$ is the natural logarithm

Exact result:

$$\frac{13413+24\log(5)}{1458}$$

Decimal approximation:

9.226081282509203298347337602193023664848158046983843913117...

9.2260812825…

Property:

$\frac{13413+24\log(5)}{1458}$ is a transcendental number

Alternate forms:

$$\frac{4471}{486}+\frac{4\log(5)}{243}$$

$$\frac{1}{486}(4471+8\log(5))$$

Alternative representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{-188-24\,\mathrm{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}$$

Series representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{4471}{486}+\frac{4\log(4)}{243}-\frac{4}{243}\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{4471}{486}+\frac{8}{243}i\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor+\frac{4\log(x)}{243}-\frac{4}{243}\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=$$
$$\frac{4471}{486}+\frac{4}{243}\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\frac{4\log(z_0)}{243}+\frac{4}{243}\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\log(z_0)-\frac{4}{243}\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{4471}{486}+\frac{4}{243}\int_1^5\frac{1}{t}\,dt$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}=\frac{4471}{486}-\frac{2i}{243\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

1/(3+sqrt7) ((((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))))-(13+3)1/10^3

Input:

$$\frac{1}{3+\sqrt{7}}\times\frac{13\times 2^2+12\times\frac{1}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{6\times 2^2\times\frac{1}{12}(5\times 2-1)^3}-(13+3)\times\frac{1}{10^3}$$

$\log(x)$ is the natural logarithm

Exact result:

$$\frac{13413+24\log(5)}{1458\left(3+\sqrt{7}\right)}-\frac{2}{125}$$

Decimal approximation:

1.618163599170202930410423187542076603669365975631431240523...

1.61816359917…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Property:

$$-\frac{2}{125}+\frac{13413+24\log(5)}{1458\left(3+\sqrt{7}\right)} \text{ is a transcendental number}$$

Alternate forms:

$$\frac{\left(3-\sqrt{7}\right)(13413+24\log(5))}{2916}-\frac{2}{125}$$

$$-\frac{-555959+972\sqrt{7}-1000\log(5)}{60750\left(3+\sqrt{7}\right)}$$

$$\frac{555959-972\sqrt{7}+1000\log(5)}{60750\left(3+\sqrt{7}\right)}$$

Alternative representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}= -\frac{16}{10^3}+\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{1}{12}\left(24\times 9^3\right)\left(3+\sqrt{7}\right)}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}= -\frac{16}{10^3}+\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{1}{12}\left(24\times 9^3\right)\left(3+\sqrt{7}\right)}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}= -\frac{16}{10^3}+\frac{-188-24\operatorname{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{1}{12}\left(24\times 9^3\right)\left(3+\sqrt{7}\right)}$$

Series representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}= -\frac{2}{125}+\frac{4471}{486\left(3+\sqrt{7}\right)}+\frac{4\log(4)}{243\left(3+\sqrt{7}\right)}-\frac{4\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}}{243\left(3+\sqrt{7}\right)}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2\,(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}=$$
$$-\frac{2}{125}+\frac{4471+8\log(z_0)+8\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-8\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-z_0)^k\,z_0^{-k}}{k}}{486\left(3+\sqrt{7}\right)}$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2\,(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}=$$
$$-\frac{2}{125}+\frac{13\,413+24\left(\log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-z_0)^k\,z_0^{-k}}{k}\right)}{1458\left(3+\sqrt{7}\right)}$$

Integral representations:

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2\,(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}=$$
$$-\frac{2}{125}+\frac{4471}{486\left(3+\sqrt{7}\right)}+\frac{4}{243\left(3+\sqrt{7}\right)}\int_1^5\frac{1}{t}\,dt$$

$$\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{1}{12}\left(6\times 2^2\,(5\times 2-1)^3\right)\left(3+\sqrt{7}\right)}-\frac{13+3}{10^3}=-\frac{2}{125}+$$
$$\frac{4471}{486\left(3+\sqrt{7}\right)}-\frac{2\,i}{243\left(3+\sqrt{7}\right)\pi}\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\quad\text{for } -1<\gamma<0$$

10^3+((((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))))^3

Input:

$$10^3+\left(\frac{13\times 2^2+12\times\frac{1}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{6\times 2^2\times\frac{1}{12}\,(5\times 2-1)^3}\right)^3$$

$\log(x)$ is the natural logarithm

Exact result:

$$1000+\frac{(13\,413+24\log(5))^3}{3\,099\,363\,912}$$

Decimal approximation:

1785.329351435099867732870606269497943875892837859548217412...

1785.329351435… result in the range of the hypothetical mass of Gluino (gluino = 1785.16 GeV).

Property:

$$1000+\frac{(13413+24\log(5))^3}{3099363912} \text{ is a transcendental number}$$

Alternate forms:

$$1000+\frac{(4471+8\log(5))^3}{114791256}$$

$$\frac{(9331+8\log(5))(21880381+64\log^2(5)+32656\log(5))}{114791256}$$

$$\frac{204165835111+512\log^3(5)+858432\log^2(5)+479756184\log(5)}{114791256}$$

Alternative representations:

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3 = 10^3+\left(\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3 = 10^3+\left(\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3 = 10^3+\left(\frac{-188-24\,\mathrm{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3$$

Series representations:

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^3 = 1000+\frac{\left(4471+8\log(4)-8\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}\right)^3}{114\,791\,256}$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^3 = 1000+\frac{\left(13\,413+24\left(2\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-x)^k\,x^{-k}}{k}\right)\right)^3}{3\,099\,363\,912} \quad \text{for } x<0$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^3 = 1000+\frac{\left(13\,413+24\left(\log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\,\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-z_0)^k\,z_0^{-k}}{k}\right)\right)^3}{3\,099\,363\,912}$$

Integral representations:

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^3 = 1000+\frac{\left(4471+8\int_1^5\frac{1}{t}\,dt\right)^3}{114\,791\,256}$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^3 = 1000+\frac{\left(4471\,\pi-4\,i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^3}{114\,791\,256\,\pi^3} \quad \text{for } -1<\gamma<0$$

10^3+((((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))))^3 - 55 - sqrt2

Input:

$$10^3 + \left(\frac{13\times 2^2 + 12\times \frac{1}{12} + 6\times 2^2 \log(5) - 6\times 5\times 2^3 - 6\times 25\times 2^4 + 4\times 5^3\times 2^5}{6\times 2^2\times \frac{1}{12}(5\times 2-1)^3}\right)^3 - 55 - \sqrt{2}$$

log(x) is the natural logarithm

Exact result:

$$945 - \sqrt{2} + \frac{(13413 + 24\log(5))^3}{3099363912}$$

Decimal approximation:

1728.915137872726772684068917545288245797323165984171269339...

1728.915137872… ≈ 1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Property:

$945 - \sqrt{2} + \frac{(13413 + 24\log(5))^3}{3099363912}$ is a transcendental number

Alternate forms:

$$945 - \sqrt{2} + \frac{(4471 + 8\log(5))^3}{114791256}$$

$$\frac{1}{114791256}\left(197852316031 - 114791256\sqrt{2} + 512\log^3(5) + 858432\log^2(5) + 479756184\log(5)\right)$$

$$\frac{197852316031}{114791256} - \sqrt{2} + \frac{64\log^3(5)}{14348907} + \frac{35768\log^2(5)}{4782969} + \frac{19989841\log(5)}{4782969}$$

Alternative representations:

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$-55+10^3+\left(\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3-\sqrt{2}$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$-55+10^3+\left(\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3-\sqrt{2}$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$-55+10^3+\left(\frac{-188-24\operatorname{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^3-\sqrt{2}$$

Series representations:

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$945-\sqrt{2}+\frac{\left(4471+8\log(4)-8\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}\right)^3}{114\,791\,256}$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$945-\sqrt{2}+\frac{\left(13\,413+24\left(2\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\right)\right)^3}{3\,099\,363\,912}\quad\text{for } x<0$$

$$10^3+\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^3-55-\sqrt{2}=$$
$$945-\sqrt{2}+$$
$$\frac{\left(4471+8\log(z_0)+8\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-8\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}\right)^3}{114\,791\,256}$$

Integral representations:

$$10^3 + \left(\frac{13\times 2^2 + \frac{12}{12} + 6\times 2^2 \log(5) - 6\times 5\times 2^3 - 6\times 25\times 2^4 + 4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2 (5\times 2-1)^3}\right)^3 - 55 - \sqrt{2} = 945 - \sqrt{2} + \frac{\left(4471 + 8\int_1^5 \frac{1}{t}\,dt\right)^3}{114\,791\,256}$$

$$10^3 + \left(\frac{13\times 2^2 + \frac{12}{12} + 6\times 2^2 \log(5) - 6\times 5\times 2^3 - 6\times 25\times 2^4 + 4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2 (5\times 2-1)^3}\right)^3 - 55 - \sqrt{2} = 945 - \sqrt{2} + \frac{\left(4471\,\pi - 4\,i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma} \frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^3}{114\,791\,256\,\pi^3} \quad \text{for } -1<\gamma<0$$

((((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))))^2+55-1/golden ratio

Input:

$$\left(\frac{13\times 2^2 + 12\times\frac{1}{12} + 6\times 2^2 \log(5) - 6\times 5\times 2^3 - 6\times 25\times 2^4 + 4\times 5^3\times 2^5}{6\times 2^2\times\frac{1}{12}(5\times 2-1)^3}\right)^2 + 55 - \frac{1}{\phi}$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Exact result:

$$-\frac{1}{\phi} + 55 + \frac{(13\,413 + 24\log(5))^2}{2\,125\,764}$$

Decimal approximation:

139.50254184271677071528476713693780516198979825446753155556...

139.5025418427… result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$55 - \frac{1}{\phi} + \frac{(13\,413 + 24\log(5))^2}{2\,125\,764}$ is a transcendental number

Alternate forms:

$$-\frac{1}{\phi}+55+\frac{(4471+8\log(5))^2}{236\,196}$$

$$-\frac{1}{\phi}+\frac{32\,980\,621}{236\,196}+\frac{16\log^2(5)}{59\,049}+\frac{17\,884\log(5)}{59\,049}$$

$$\frac{32\,980\,621+64\log^2(5)+71\,536\log(5)}{236\,196}-\frac{1}{\phi}$$

Alternative representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$
$$55-\frac{1}{\phi}+\left(\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$
$$55-\frac{1}{\phi}+\left(\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$
$$55-\frac{1}{\phi}+\left(\frac{-188-24\operatorname{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

Series representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$
$$55-\frac{1}{\phi}+\frac{\left(4471+8\log(4)-8\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}\right)^2}{236\,196}$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$

$$55-\frac{1}{\phi}+\frac{\left(13\,413+24\left(2\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-x)^k\,x^{-k}}{k}\right)\right)^2}{2\,125\,764}\quad\text{for } x<0$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$

$$55-\frac{1}{\phi}+\frac{\left(13\,413+24\left(\log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\,\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(5-z_0)^k\,z_0^{-k}}{k}\right)\right)^2}{2\,125\,764}$$

Integral representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$

$$\frac{1}{236\,196\,(1+\sqrt{5})}\left(32\,508\,229+32\,980\,621\sqrt{5}+71\,536\int_1^5\frac{1}{t}\,dt+71\,536\sqrt{5}\int_1^5\frac{1}{t}\,dt+64\left(\int_1^5\frac{1}{t}\,dt\right)^2+64\sqrt{5}\left(\int_1^5\frac{1}{t}\,dt\right)^2\right)$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+55-\frac{1}{\phi}=$$

$$55-\frac{1}{\phi}+\frac{\left(4471\,\pi-4\,i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^2}{236\,196\,\pi^2}\quad\text{for } -1<\gamma<0$$

((((13*2^2+12*1/12+6*2^2 ln(5) – 6*5*2^3-6*25*2^4+4*5^3*2^5))/((6*2^2*1/12*(5*2-1)^3))))^2+47-7

Input:

$$\left(\frac{13\times 2^2+12\times\frac{1}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{6\times 2^2\times\frac{1}{12}\,(5\times 2-1)^3}\right)^2+47-7$$

$\log(x)$ is the natural logarithm

Exact result:

$$40+\frac{(13\,413+24\log(5))^2}{2\,125\,764}$$

Decimal approximation:

125.1205758314666655634893539713034432797101074342732944177...

125.1205758314… result very near to the Higgs boson mass 125.18 GeV

Property:

$40+\frac{(13413+24\log(5))^2}{2125764}$ is a transcendental number

Alternate forms:

$$40+\frac{(4471+8\log(5))^2}{236196}$$

$$\frac{29437681+64\log^2(5)+71536\log(5)}{236196}$$

$$\frac{29437681}{236196}+\frac{16\log^2(5)}{59049}+\frac{17884\log(5)}{59049}$$

Alternative representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+47-7=40+\left(\frac{-188+24\log_e(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+47-7=40+\left(\frac{-188+24\log(a)\log_a(5)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2\,(5\times 2-1)^3}\right)^2+47-7=40+\left(\frac{-188-24\,\mathrm{Li}_1(-4)-150\times 2^4+4\times 2^5\times 5^3+\frac{12}{12}}{\frac{24\times 9^3}{12}}\right)^2$$

Series representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^2+47-7=40+\frac{\left(4471+8\log(4)-8\sum_{k=1}^{\infty}\frac{\left(-\frac{1}{4}\right)^k}{k}\right)^2}{236\,196}$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^2+47-7=40+\frac{\left(13\,413+24\left(2\,i\,\pi\left\lfloor\frac{\arg(5-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k(5-x)^k x^{-k}}{k}\right)\right)^2}{2\,125\,764}\quad\text{for } x<0$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^2+47-7=40+\frac{\left(13\,413+24\left(\log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\,\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(5-z_0)^k z_0^{-k}}{k}\right)\right)^2}{2\,125\,764}$$

Integral representations:

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^2+47-7=\frac{29\,437\,681+71\,536\int_1^5\frac{1}{t}\,dt+64\left(\int_1^5\frac{1}{t}\,dt\right)^2}{236\,196}$$

$$\left(\frac{13\times 2^2+\frac{12}{12}+6\times 2^2\log(5)-6\times 5\times 2^3-6\times 25\times 2^4+4\times 5^3\times 2^5}{\frac{6}{12}\times 2^2(5\times 2-1)^3}\right)^2+47-7=40+\frac{\left(4471\,\pi-4\,i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{4^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^2}{236\,196\,\pi^2}\quad\text{for } -1<\gamma<0$$

We have that:

$$T = \frac{{r_h}^3 - 3r_h\sqrt[3]{36\epsilon^2} + 2\sqrt[3]{6\epsilon}}{24\pi\,|\epsilon|\,{r_h}^2}. \qquad r = r_h.$$

((5^3-3*5(36*(1/12)^2)^(1/3)+2(6*1/12)^(1/3))) / (24Pi*1/12*5^2)

Input:

$$\frac{5^3 - 3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{6\times\frac{1}{12}}}{24\,\pi\times\frac{1}{12}\times5^2}$$

Result:

$$\frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{50\,\pi}$$

Decimal approximation:

0.7457236255241873532239695221279631950373658487715550894 05...

0.745723625524…

Property:

$\frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{50\,\pi}$ is a transcendental number

Alternate forms:

$$\frac{250 - 15\sqrt[3]{2} + 2\times2^{2/3}}{2\,(50\,\pi)}$$

$$\frac{250 - 15\sqrt[3]{2} + 2\times2^{2/3}}{100\,\pi}$$

$$\frac{\frac{5}{2} - \frac{3}{10\times2^{2/3}} + \frac{1}{25\sqrt[3]{2}}}{\pi}$$

Alternative representations:

$$\frac{5^3 - 3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\,\pi\,5^2}{12}} = \frac{5^3 + 2\sqrt[3]{\frac{6}{12}} - 15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{4320\,^\circ\,5^2}{12}}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = -\frac{5^3 + 2\sqrt[3]{\frac{6}{12}} - 15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24}{12}\, i\log(-1)\, 5^2}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{5^3 + 2\sqrt[3]{\frac{6}{12}} - 15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24}{12}\cos^{-1}(-1)\, 5^2}$$

Series representations:

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{200\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{50\sum_{k=0}^{\infty} -\frac{4(-1)^k\, 1195^{-1-2k}\left(5^{1+2k} - 4\times 239^{1+2k}\right)}{1+2k}}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{50\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k} + \frac{2}{1+4k} + \frac{1}{3+4k}\right)}$$

Integral representations:

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{200\int_0^1\sqrt{1-t^2}\,dt}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{100\int_0^{\infty}\frac{1}{1+t^2}\,dt}$$

$$\frac{5^3 - 3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2} + 2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}} = \frac{125 - \frac{15}{2^{2/3}} + 2^{2/3}}{100\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt}$$

[2/(((((5^3-3*5(36*(1/12)^2)^(1/3)+2(6*1/12)^(1/3))) / (24Pi*1/12*5^2))))]^1/2-(18+2)1/10^3

Input:

$$\sqrt{\frac{2}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{6\times\frac{1}{12}}}{24\,\pi\times\frac{1}{12}\times 5^2}}}-(18+2)\times\frac{1}{10^3}$$

Exact result:

$$10\sqrt{\frac{\pi}{125-\frac{15}{2^{2/3}}+2^{2/3}}}-\frac{1}{50}$$

Decimal approximation:

1.617668692554153584248850028139741407032414227080169541134...

1.61766869255…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Property:

$$-\frac{1}{50}+10\sqrt{\frac{\pi}{125-\frac{15}{2^{2/3}}+2^{2/3}}}$$ is a transcendental number

Alternate forms:

$$10\sqrt{\frac{\left(62\,560+3758\sqrt[3]{2}-275\times 2^{2/3}\right)\pi}{7\,831\,641}}-\frac{1}{50}$$

$$\frac{1}{50}\left(500\sqrt{\frac{2\,\pi}{250-15\sqrt[3]{2}+2\times 2^{2/3}}}-1\right)$$

$$10\sqrt[3]{2}\sqrt{\frac{\pi}{-15+2\sqrt[3]{2}+125\times 2^{2/3}}}-\frac{1}{50}$$

[1/(((((5^3-3*5(36*(1/12)^2)^(1/3)+2(6*1/12)^(1/3))) 1/(24Pi*1/12*5^2))))]^16+29+1/2+1/golden ratio

Input:

$$\left(\frac{1}{\left(5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{6\times\frac{1}{12}}\right)\times\frac{1}{24\pi\times\frac{1}{12}\times 5^2}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}$$

ϕ is the golden ratio

Exact result:

$$\frac{1}{\phi}+\frac{59}{2}+\frac{1525878906250000000000000000\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

Decimal approximation:

139.45161241734595373242378934252054820332489622741642592 72...

139.4516124173… result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$$\frac{59}{2}+\frac{1}{\phi}+\frac{1525878906250000000000000000\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$ is a transcendental number

Alternate forms:

$$\frac{1}{\phi}+\frac{59}{2}+\frac{1562500000000000000000000000000\times 2^{2/3}\pi^{16}}{\left(-15+2\sqrt[3]{2}+125\times 2^{2/3}\right)^{16}}$$

$$\frac{59}{2}+\frac{2}{1+\sqrt{5}}+\frac{1525878906250000000000000000\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{1}{2}\left(58+\sqrt{5}\right)+\left(1\,562\,500\,000\,000\,000\,000\,000\,000\,000\,000\left(1\,015\,453\,839\,476\,400\,012\,162\,962\,303\,745\,111\,457\,126\,030\,887\,038\,381\,016\,369\,934\,977\,747\,040+873\,911\,939\,530\,203\,391\,184\,492\,011\,043\,439\,887\,712\,012\,158\,869\,637\,706\,784\,533\,386\,115\,392\sqrt[3]{2}+327\,339\,718\,588\,787\,625\,808\,656\,974\,337\,466\,387\,139\,559\,085\,836\,125\,315\,874\,637\,356\,048\,025\times 2^{2/3}\right)\pi^{16}\right)/3\,391\,812\,169\,316\,749\,774\,548\,836\,922\,718\,062\,303\,562\,367\,845\,317\,732\,123\,443\,815\,354\,452\,188\,694\,057\,476\,533\,214\,301\,606\,529\,461\,776\,893\,209$$

Alternative representations:

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$

$$\frac{59}{2}+-\frac{1}{2\cos(216\,°)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\pi 5^2}{12}}}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$

$$\frac{59}{2}+-\frac{1}{2\cos(216\,°)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{4320\,°\,5^2}{12}}}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$

$$\frac{59}{2}+\frac{1}{2\cos\left(\frac{\pi}{5}\right)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\pi 5^2}{12}}}\right)^{16}$$

Series representations:

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$

$$\frac{59}{2}+\frac{2}{1+\sqrt{5}}+\frac{6\,553\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=\frac{59}{2}+\frac{1}{\phi}+$$

$$\frac{1\,525\,878\,906\,250\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=\frac{59}{2}+\frac{2}{1+\sqrt{5}}+$$
$$\frac{1525878906250000000000000\left(\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

Integral representations:

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=\frac{59}{2}+\frac{2}{1+\sqrt{5}}+$$
$$\frac{6553600000000000000000000000000000000\left(\int_0^1\sqrt{1-t^2}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$
$$\frac{59}{2}+\frac{2}{1+\sqrt{5}}+\frac{100000000000000000000000000000000\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+29+\frac{1}{2}+\frac{1}{\phi}=$$
$$\frac{59}{2}+\frac{2}{1+\sqrt{5}}+\frac{100000000000000000000000000000000\left(\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

[1/(((((5^3-3*5(36*(1/12)^2)^(1/3)+2(6*1/12)^(1/3))) 1/ (24Pi*1/12*5^2))))]^16+18-Pi+golden ratio

Input:

$$\left(\frac{1}{\left(5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{6\times\frac{1}{12}}\right)\times\frac{1}{24\pi\times\frac{1}{12}\times 5^2}}\right)^{16}+18-\pi+\phi$$

ϕ is the golden ratio

Exact result:

$$\phi+18-\pi+\frac{1525878906250000000000000000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

Decimal approximation:

125.8100197637561604939611459592410453191277268280413201062...

125.81001976… result very near to the Higgs boson mass 125.18 GeV

Property:

$$18+\phi-\pi+\frac{1525878906250000000000000000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$ is a transcendental number

Alternate forms:

$$\phi+18-\pi+\frac{1562500000000000000000000000000\times 2^{2/3}\,\pi^{16}}{\left(-15+2\sqrt[3]{2}+125\times 2^{2/3}\right)^{16}}$$

$$\frac{37}{2}+\frac{\sqrt{5}}{2}-\pi+\frac{1525878906250000000000000000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{1}{2}\left(37+\sqrt{5}\right)-\pi+\Big(1\,562\,500\,000\,000\,000\,000\,000\,000\,000\,000$$
$$\Big(1\,015\,453\,839\,476\,400\,012\,162\,962\,303\,745\,111\,457\,126\,030\,887\,038\,381\ldots$$
$$016\,369\,934\,977\,747\,040 +$$
$$873\,911\,939\,530\,203\,391\,184\,492\,011\,043\,439\,887\,712\,012\,158\,869\,637\ldots$$
$$706\,784\,533\,386\,115\,392\,\sqrt[3]{2} +$$
$$327\,339\,718\,588\,787\,625\,808\,656\,974\,337\,466\,387\,139\,559\,085\,836\,125\ldots$$
$$315\,874\,637\,356\,048\,025\times 2^{2/3}\Big)\pi^{16}\Big)\Big/$$
$$3\,391\,812\,169\,316\,749\,774\,548\,836\,922\,718\,062\,303\,562\,367\,845\,317\,732\,123\,443\ldots$$
$$815\,354\,452\,188\,694\,057\,476\,533\,214\,301\,606\,529\,461\,776\,893\,209$$

Alternative representations:

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\,\pi\,5^2}{12}}}\right)^{16}+18-\pi+\phi=$$
$$18-\pi-2\cos(216\,°)+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\,\pi\,5^2}{12}}}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\,\pi\,5^2}{12}}}\right)^{16}+18-\pi+\phi=$$
$$18-180\,°-2\cos(216\,°)+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{4320\,°\,5^2}{12}}}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$18-\pi+2\cos\left(\frac{\pi}{5}\right)+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\pi 5^2}{12}}}\right)^{16}$$

Series representations:

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$\Bigg(16\Bigg(147\,835\,494\,843\,627\,011\,415\,064\,707\,375\,716\,760\,000-$$
$$216\,791\,138\,181\,594\,424\,936\,718\,014\,808\,418\,001\,755\sqrt[3]{2}+$$
$$138\,917\,131\,707\,756\,891\,332\,632\,978\,078\,125\,684\,624\times 2^{2/3}+$$
$$3\,995\,553\,914\,692\,621\,930\,136\,883\,983\,127\,480\,000\sqrt{5}-$$
$$5\,859\,219\,950\,853\,903\,376\,668\,054\,454\,281\,567\,615\sqrt[3]{2}\sqrt{5}+$$
$$3\,754\,517\,073\,182\,618\,684\,665\,756\,164\,273\,667\,152\times 2^{2/3}\sqrt{5}-$$
$$31\,964\,431\,317\,540\,975\,441\,095\,071\,865\,019\,840\,000\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}+$$
$$46\,873\,759\,606\,831\,227\,013\,344\,435\,634\,252\,540\,920\sqrt[3]{2}\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}-$$
$$30\,036\,136\,585\,460\,949\,477\,326\,049\,314\,189\,337\,216\times 2^{2/3}\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}+$$
$$26\,843\,545\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000$$
$$\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^{16}\Bigg)\Bigg)\Big/\left(250-15\sqrt[3]{2}+2\times 2^{2/3}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$\Bigg(16\Bigg(147\,835\,494\,843\,627\,011\,415\,064\,707\,375\,716\,760\,000 -$$
$$216\,791\,138\,181\,594\,424\,936\,718\,014\,808\,418\,001\,755\sqrt[3]{2} +$$
$$138\,917\,131\,707\,756\,891\,332\,632\,978\,078\,125\,684\,624\times2^{2/3} +$$
$$3\,995\,553\,914\,692\,621\,930\,136\,883\,983\,127\,480\,000\sqrt{5} -$$
$$5\,859\,219\,950\,853\,903\,376\,668\,054\,454\,281\,567\,615\sqrt[3]{2}\sqrt{5} +$$
$$3\,754\,517\,073\,182\,618\,684\,665\,756\,164\,273\,667\,152\times2^{2/3}\sqrt{5} -$$
$$7\,991\,107\,829\,385\,243\,860\,273\,767\,966\,254\,960\,000\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)+$$
$$11\,718\,439\,901\,707\,806\,753\,336\,108\,908\,563\,135\,230\sqrt[3]{2}\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)-$$
$$7\,509\,034\,146\,365\,237\,369\,331\,512\,328\,547\,334\,304\times2^{2/3}\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)+$$
$$6\,250\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)^{16}\Bigg)\Bigg)\Big/\left(250-15\sqrt[3]{2}+2\times2^{2/3}\right)^{16}$$

$$\left(\frac{1}{\frac{5^3-3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$\Bigg(16\Bigg(147\,835\,494\,843\,627\,011\,415\,064\,707\,375\,716\,760\,000 - 216\,791\,138\,181\,594\,424\,936\,718\,014\,808\,418\,001\,755\sqrt[3]{2} + 138\,917\,131\,707\,756\,891\,332\,632\,978\,078\,125\,684\,624\times2^{2/3} + 3\,995\,553\,914\,692\,621\,930\,136\,883\,983\,127\,480\,000\sqrt{5} - 5\,859\,219\,950\,853\,903\,376\,668\,054\,454\,281\,567\,615\sqrt[3]{2}\sqrt{5} + 3\,754\,517\,073\,182\,618\,684\,665\,756\,164\,273\,667\,152\times2^{2/3}\sqrt{5} + 6\,250\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times239^{1+2k}\right)}{1+2k}\right)^{16} + 7\,991\,107\,829\,385\,243\,860\,273\,767\,966\,254\,960\,000\sum_{k=0}^{\infty}\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times239^{1+2k}\right)}{1+2k} - 11\,718\,439\,901\,707\,806\,753\,336\,108\,908\,563\,135\,230\sqrt[3]{2}\sum_{k=0}^{\infty}\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times239^{1+2k}\right)}{1+2k} + 7\,509\,034\,146\,365\,237\,369\,331\,512\,328\,547\,334\,304\times2^{2/3}\sum_{k=0}^{\infty}\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times239^{1+2k}\right)}{1+2k}\Bigg)\Bigg)\Big/\left(250-15\sqrt[3]{2}+2\times2^{2/3}\right)^{16}$$

Integral representations:

$$\left(\frac{1}{\frac{5^3-3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=18-\frac{3\sqrt{3}}{4}+\phi-24\int_0^{\frac{1}{4}}\sqrt{t-t^2}\,dt+\frac{1\,525\,878\,906\,250\,000\,000\,000\,000\,000\left(\frac{3\sqrt{3}}{4}+24\int_0^{\frac{1}{4}}\sqrt{t-t^2}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$\begin{aligned}
&\Bigg(16\Bigg(147\,835\,494\,843\,627\,011\,415\,064\,707\,375\,716\,760\,000 - \\
&\quad 216\,791\,138\,181\,594\,424\,936\,718\,014\,808\,418\,001\,755\sqrt[3]{2} + \\
&\quad 138\,917\,131\,707\,756\,891\,332\,632\,978\,078\,125\,684\,624\times 2^{2/3} + \\
&\quad 3\,995\,553\,914\,692\,621\,930\,136\,883\,983\,127\,480\,000\sqrt{5} - \\
&\quad 5\,859\,219\,950\,853\,903\,376\,668\,054\,454\,281\,567\,615\sqrt[3]{2}\sqrt{5} + \\
&\quad 3\,754\,517\,073\,182\,618\,684\,665\,756\,164\,273\,667\,152\times 2^{2/3}\sqrt{5} - \\
&\quad 15\,982\,215\,658\,770\,487\,720\,547\,535\,932\,509\,920\,000\int_0^\infty \frac{1}{1+t^2}\,dt + \\
&\quad 23\,436\,879\,803\,415\,613\,506\,672\,217\,817\,126\,270\,460\sqrt[3]{2}\int_0^\infty \frac{1}{1+t^2}\,dt - \\
&\quad 15\,018\,068\,292\,730\,474\,738\,663\,024\,657\,094\,668\,608\times 2^{2/3}\int_0^\infty \frac{1}{1+t^2}\,dt + \\
&\quad 409\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\int_0^\infty \frac{1}{1+t^2}\,dt\right)^{16}\Bigg)\Bigg)\Big/ \\
&\left(250-15\sqrt[3]{2}+2\times 2^{2/3}\right)^{16}
\end{aligned}$$

$$\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18-\pi+\phi=$$

$$\begin{aligned}
&\Bigg(16\Bigg(147\,835\,494\,843\,627\,011\,415\,064\,707\,375\,716\,760\,000 - \\
&\quad 216\,791\,138\,181\,594\,424\,936\,718\,014\,808\,418\,001\,755\sqrt[3]{2} + \\
&\quad 138\,917\,131\,707\,756\,891\,332\,632\,978\,078\,125\,684\,624\times 2^{2/3} + \\
&\quad 3\,995\,553\,914\,692\,621\,930\,136\,883\,983\,127\,480\,000\sqrt{5} - \\
&\quad 5\,859\,219\,950\,853\,903\,376\,668\,054\,454\,281\,567\,615\sqrt[3]{2}\sqrt{5} + \\
&\quad 3\,754\,517\,073\,182\,618\,684\,665\,756\,164\,273\,667\,152\times 2^{2/3}\sqrt{5} - \\
&\quad 15\,982\,215\,658\,770\,487\,720\,547\,535\,932\,509\,920\,000\int_0^\infty \frac{\sin(t)}{t}\,dt + \\
&\quad 23\,436\,879\,803\,415\,613\,506\,672\,217\,817\,126\,270\,460\sqrt[3]{2}\int_0^\infty \frac{\sin(t)}{t}\,dt - \\
&\quad 15\,018\,068\,292\,730\,474\,738\,663\,024\,657\,094\,668\,608\times 2^{2/3}\int_0^\infty \frac{\sin(t)}{t}\,dt + \\
&\quad 409\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\int_0^\infty \frac{\sin(t)}{t}\,dt\right)^{16}\Bigg)\Bigg)\Big/ \\
&\left(250-15\sqrt[3]{2}+2\times 2^{2/3}\right)^{16}
\end{aligned}$$

27*1/2((([1/(((((5^3-3*5(36*(1/12)^2)^(1/3)+2(6*1/12)^(1/3))) 1/(24Pi*1/12*5^2))))]^16+18+1/golden ratio)))+golden ratio

Input:

$$27\times\frac{1}{2}\left(\left(\left(\frac{1}{\left(5^3-3\times5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{6\times\frac{1}{12}}\right)\times\frac{1}{24\pi\times\frac{1}{12}\times5^2}}\right)^{16}+18+\frac{1}{\phi}\right)\right)+\phi$$

ϕ is the golden ratio

Exact result:

$$\phi+\frac{27}{2}\left(\frac{1}{\phi}+18+\frac{1\,525\,878\,906\,250\,000\,000\,000\,000\,000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}\right)$$

Decimal approximation:

1728.964801622920270235925742958393038862606408249927512880...

1728.964801622... ≈ 1729

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Property:

$$\phi+\frac{27}{2}\left(18+\frac{1}{\phi}+\frac{1\,525\,878\,906\,250\,000\,000\,000\,000\,000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}\right)$$
is a transcendental number

Alternate forms:

$$\frac{27}{2\phi}+\phi+243+\frac{21\,093\,750\,000\,000\,000\,000\,000\,000\,000\,000\times2^{2/3}\,\pi^{16}}{\left(-15+2\sqrt[3]{2}+125\times2^{2/3}\right)^{16}}$$

$$\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+\frac{20\,599\,365\,234\,375\,000\,000\,000\,000\,000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{1}{2}\left(1+\sqrt{5}\right)+\frac{27}{2}\left(18+\frac{2}{1+\sqrt{5}}+\frac{1525878906250000000000000000\,\pi^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}\right)$$

Alternative representations:

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=$$

$$-2\cos(216\,°)+\frac{27}{2}\left(18+-\frac{1}{2\cos(216\,°)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\pi 5^2}{12}}}\right)^{16}\right)$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=$$

$$-2\cos(216\,°)+\frac{27}{2}\left(18+-\frac{1}{2\cos(216\,°)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{4320\,°\,5^2}{12}}}\right)^{16}\right)$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=$$

$$2\cos\left(\frac{\pi}{5}\right)+\frac{27}{2}\left(18+\frac{1}{2\cos\left(\frac{\pi}{5}\right)}+\left(\frac{1}{\frac{5^3+2\sqrt[3]{\frac{6}{12}}-15\sqrt[3]{36\left(\frac{1}{12}\right)^2}}{\frac{24\pi 5^2}{12}}}\right)^{16}\right)$$

Series representations:

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+$$
$$\frac{88\,473\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=$$
$$\phi+\frac{27}{2}\left(18+\frac{1}{\phi}+\left(1\,525\,878\,906\,250\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)^{16}\right)\Big/\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}\right)$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+\frac{20\,599\,365\,234\,375\,000\,000\,000\,000\,000\left(\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

Integral representations:

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+\frac{88\,473\,600\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\int_0^1\sqrt{1-t^2}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+\frac{1\,350\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\int_0^\infty\frac{1}{1+t^2}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

$$\frac{27}{2}\left(\left(\frac{1}{\frac{5^3-3\times 5\sqrt[3]{36\left(\frac{1}{12}\right)^2}+2\sqrt[3]{\frac{6}{12}}}{\frac{24\pi 5^2}{12}}}\right)^{16}+18+\frac{1}{\phi}\right)+\phi=\frac{487}{2}+\frac{\sqrt{5}}{2}+\frac{27}{1+\sqrt{5}}+\frac{1\,350\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\left(\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt\right)^{16}}{\left(125-\frac{15}{2^{2/3}}+2^{2/3}\right)^{16}}$$

We have that:

$$S = \pi {r_h}^2 \left[1 + \frac{r_h \sqrt[6]{6\,|\epsilon|} + 2}{3 r_h \sqrt[6]{6\,|\epsilon|}} \right]$$

For: $r_h = 5$ and $\epsilon = 1/12$, we obtain:

Pi*25[1+(((5*(6*1/12)^(1/6))+2))/(((3*5*(6*1/12)^(1/6)))]

Input:

$$\pi \times 25 \left(1 + \frac{5 \sqrt[6]{6 \times \frac{1}{12}} + 2}{3 \times 5 \sqrt[6]{6 \times \frac{1}{12}}} \right)$$

Result:

$$25 \left(1 + \frac{1}{15} \sqrt[6]{2} \left(2 + \frac{5}{\sqrt[6]{2}} \right) \right) \pi$$

Decimal approximation:

116.47415020266700468861746085339698943431224291894201085 2...

116.4741502…

Property:

$25 \left(1 + \frac{1}{15} \sqrt[6]{2} \left(2 + \frac{5}{\sqrt[6]{2}} \right) \right) \pi$ is a transcendental number

Alternate forms:

$$\frac{10}{3} \pi \left(10 + \sqrt[6]{2} \right)$$

$$\frac{100\,\pi}{3} + \frac{10 \sqrt[6]{2}\,\pi}{3}$$

$$\left(25 + \sqrt[6]{2} \left(\frac{10}{3} + \frac{25}{3 \sqrt[6]{2}} \right) \right) \pi$$

Alternative representations:

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=4500\,°\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=-25\,i\log(-1)\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=25\cos^{-1}(-1)\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

Series representations:

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{40}{3}\left(10+\sqrt[6]{2}\right)\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{40}{3}\left(10+\sqrt[6]{2}\right)\sum_{k=0}^{\infty}\frac{(-1)^{1+k}\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{10}{3}\left(10+\sqrt[6]{2}\right)\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{40}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\sqrt{1-t^2}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^1 \frac{1}{\sqrt{1-t^2}}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)=\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^\infty \frac{1}{1+t^2}\,dt$$

Pi*25[1+(((5*(6*1/12)^(1/6))+2))/(((3*5*(6*1/12)^(1/6))))]+21+2

Input:

$$\pi\times 25\left(1+\frac{5\sqrt[6]{6\times\frac{1}{12}}+2}{3\times 5\sqrt[6]{6\times\frac{1}{12}}}\right)+21+2$$

Result:

$$23+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi$$

Decimal approximation:

139.47415020266700468861746085339698943431224291894201 0852...

139.4741502… result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$23+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi$ is a transcendental number

Alternate forms:

$$\frac{1}{3}\left(69+100\,\pi+10\sqrt[6]{2}\,\pi\right)$$

$$23+\frac{10}{3}\left(10+\sqrt[6]{2}\right)\pi$$

$$23+\frac{100\,\pi}{3}+\frac{10\sqrt[6]{2}\,\pi}{3}$$

Alternative representations:

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 = 23 + 4500\,^\circ \left(1 + \frac{2 + 5 \sqrt[6]{\frac{6}{12}}}{15 \sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 = 23 - 25\, i \log(-1) \left(1 + \frac{2 + 5 \sqrt[6]{\frac{6}{12}}}{15 \sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 = 23 + 25 \cos^{-1}(-1) \left(1 + \frac{2 + 5 \sqrt[6]{\frac{6}{12}}}{15 \sqrt[6]{\frac{6}{12}}}\right)$$

Series representations:

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 = 23 + \frac{40}{3} \left(10 + \sqrt[6]{2}\right) \sum_{k=0}^{\infty} \frac{(-1)^k}{1 + 2k}$$

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 =$$
$$23 + \frac{10}{3} \left(10 + \sqrt[6]{2}\right) \sum_{k=0}^{\infty} \left(-\frac{1}{4}\right)^k \left(\frac{1}{1 + 2k} + \frac{2}{1 + 4k} + \frac{1}{3 + 4k}\right)$$

$$\pi\, 25 \left(1 + \frac{5 \sqrt[6]{\frac{6}{12}} + 2}{3 \times 5 \sqrt[6]{\frac{6}{12}}}\right) + 21 + 2 =$$
$$23 + 25 \left(1 + \frac{1}{15} \sqrt[6]{2} \left(2 + \frac{5}{\sqrt[6]{2}}\right)\right) \sum_{k=0}^{\infty} -\frac{4 (-1)^k\, 1195^{-1-2k} \left(5^{1+2k} - 4 \times 239^{1+2k}\right)}{1 + 2k}$$

Integral representations:

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+21+2=23+\frac{40}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\sqrt{1-t^2}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+21+2=23+\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+21+2=23+\int_0^\infty\frac{20\left(10+\sqrt[6]{2}\right)}{3\left(1+t^2\right)}\,dt$$

Pi*25[1+(((5*(6*1/12)^(1/6))+2))/(((3*5*(6*1/12)^(1/6))))]+8+1/golden ratio

Input:

$$\pi\times 25\left(1+\frac{5\sqrt[6]{6\times\frac{1}{12}}+2}{3\times 5\sqrt[6]{6\times\frac{1}{12}}}\right)+8+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+8+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi$$

Decimal approximation:

125.09218419141659531706633291970533706115153347169996394 74...

125.0921841914… result very near to the Higgs boson mass 125.18 GeV

Property:

$8+\frac{1}{\phi}+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi$ is a transcendental number

Alternate forms:

$$\frac{1}{6}\left(45+3\sqrt{5}+200\pi+20\sqrt[6]{2}\,\pi\right)$$

$$\frac{1}{\phi}+8+25\pi+\frac{5}{3}\left(5+2\sqrt[6]{2}\right)\pi$$

$$\frac{1}{2}\left(15+\sqrt{5}\right)+\frac{10}{3}\left(10+\sqrt[6]{2}\right)\pi$$

Alternative representations:

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi}=8+-\frac{1}{2\cos(216\,°)}+25\pi\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi}=8+-\frac{1}{2\cos(216\,°)}+4500\,°\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi}=8+\frac{1}{2\cos\left(\frac{\pi}{5}\right)}+25\pi\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)$$

Series representations:

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi}=8+\frac{2}{1+\sqrt{5}}+\sum_{k=0}^{\infty}\frac{40\,(-1)^k\left(10+\sqrt[6]{2}\right)}{3+6k}$$

$$\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi}=$$
$$8+\frac{1}{\phi}+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\sum_{k=0}^{\infty}-\frac{4\,(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times239^{1+2k}\right)}{1+2k}$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi} = 8+\frac{1}{\phi}+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{2}{1+4k}+\frac{2}{2+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi} = 8+\frac{1}{\phi}+\frac{40}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\sqrt{1-t^2}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi} = 8+\frac{1}{\phi}+\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+8+\frac{1}{\phi} = 8+\frac{1}{\phi}+\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^\infty\frac{\sin(t)}{t}\,dt$$

27*1/2(((Pi*25[1+(((5*(6*1/12)^(1/6))+2))/(((3*5*(6*1/12)^(1/6))))]+11+1/golden ratio)))

Input:

$$27\times\frac{1}{2}\left(\pi\times 25\left(1+\frac{5\sqrt[6]{6\times\frac{1}{12}}+2}{3\times 5\sqrt[6]{6\times\frac{1}{12}}}\right)+11+\frac{1}{\phi}\right)$$

ϕ is the golden ratio

Result:

$$\frac{27}{2}\left(\frac{1}{\phi}+11+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi\right)$$

Decimal approximation:

1729.2444865841240367803954944160220503255457018679495132906...

1729.2444865841…

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

Property:

$\frac{27}{2}\left(11+\frac{1}{\phi}+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\pi\right)$ is a transcendental number

Alternate forms:

$$\frac{9}{4}\left(63+3\sqrt{5}+200\pi+20\sqrt[6]{2}\pi\right)$$

$$\frac{27}{4}\left(21+\sqrt{5}\right)+45\left(10+\sqrt[6]{2}\right)\pi$$

$$\frac{9\left(\left(33+10\left(10+\sqrt[6]{2}\right)\pi\right)\phi+3\right)}{2\phi}$$

Alternative representations:

$$\frac{27}{2}\left(\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+-\frac{1}{2\cos(216^\circ)}+25\pi\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)\right)$$

$$\frac{27}{2}\left(\pi\,25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=$$
$$\frac{27}{2}\left(11+-\frac{1}{2\cos(216^\circ)}+4500^\circ\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)\right)$$

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+\frac{1}{2\cos\left(\frac{\pi}{5}\right)}+25\,\pi\left(1+\frac{2+5\sqrt[6]{\frac{6}{12}}}{15\sqrt[6]{\frac{6}{12}}}\right)\right)$$

Series representations:

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+\frac{1}{\phi}+\frac{40}{3}\left(10+\sqrt[6]{2}\right)\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)$$

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}$$
$$\left(11+\frac{1}{\phi}+25\left(1+\frac{1}{15}\sqrt[6]{2}\left(2+\frac{5}{\sqrt[6]{2}}\right)\right)\sum_{k=0}^{\infty}-\frac{4(-1)^k\, 1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)$$

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=$$
$$\frac{297}{2}+\frac{27}{1+\sqrt{5}}+\sum_{k=0}^{\infty}\frac{45(-1)^k\, 2^{1-2k}\left(10+\sqrt[6]{2}\right)\left(5+21k+20k^2\right)}{(1+2k)(1+4k)(3+4k)}$$

Integral representations:

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+\frac{1}{\phi}+\frac{40}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\sqrt{1-t^2}\,dt\right)$$

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+\frac{1}{\phi}+\frac{20}{3}\left(10+\sqrt[6]{2}\right)\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt\right)$$

$$\frac{27}{2}\left(\pi\, 25\left(1+\frac{5\sqrt[6]{\frac{6}{12}}+2}{3\times 5\sqrt[6]{\frac{6}{12}}}\right)+11+\frac{1}{\phi}\right)=\frac{27}{2}\left(11+\frac{1}{\phi}+10\left(10+\sqrt[6]{2}\right)\int_0^\infty \frac{\sin^4(t)}{t^4}\,dt\right)$$

From the entropy 116.47415 , we obtain:

Mass = 6.62621E-8

Radius = 9.84102E-35

Temperature = 1.85167E30

from the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(6.62621e-8)* sqrt[[-((((1.85167e+30 * 4*Pi*(9.84102e-35)^3-(9.84102e-35)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times\frac{1}{6.62621\times 10^{-8}}\sqrt{-\frac{1.85167\times 10^{30}\times 4\,\pi\,(9.84102\times 10^{-35})^3-(9.84102\times 10^{-35})^2}{6.67\times 10^{-11}}}\right)}$$

Result:

1.6180780607722005424544539245142481647632879439593184 28397...

1.6180780607722…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Possible closed forms:

$\phi \approx 1.618033988$

$\frac{25e}{42} \approx 1.618024897$

$-e!+5-\frac{5}{e}+e \approx 1.618064146$

$\Phi+1 \approx 1.618033988$

$\sqrt{\frac{3\mathcal{K}_{-1}}{2}} \approx 1.618057011$

$\frac{1}{\Phi} \approx 1.618033988$

With regard the golden ratio, we have the following Ramanujan calculation:

1/(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))

Input:

$$\frac{1}{\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\,e^{\left(-\sqrt{5}\,\pi\right)^5}}$$

Exact result:

$$\frac{1}{\frac{1}{32}\left(\sqrt{5}-1\right)^5+5\,e^{-25\sqrt{5}\,\pi^5}}$$

Decimal approximation:

11.09016994374947424102293417182819058860154589902881431067...

(11*5*(e^((-sqrt(5)*Pi))^5))) / (((2*(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))

Input:

$$\frac{11\times 5\,e^{\left(-\sqrt{5}\,\pi\right)^5}}{2\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\,e^{\left(-\sqrt{5}\,\pi\right)^5}\right)}$$

Exact result:

$$\frac{55\, e^{-25\sqrt{5}\,\pi^5}}{2\left(\frac{1}{32}\left(\sqrt{5}-1\right)^5+5\, e^{-25\sqrt{5}\,\pi^5}\right)}$$

Decimal approximation:

$9.9929022507071872307053630412945712274243697626525 5\ldots \times 10^{-7428}$

(5sqrt(5)*5*(e^((-sqrt(5)*Pi))^5))) / (((2*(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))

Input:

$$\frac{5\sqrt{5}\times 5\, e^{\left(-\sqrt{5}\,\pi\right)^5}}{2\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\, e^{\left(-\sqrt{5}\,\pi\right)^5}\right)}$$

Exact result:

$$\frac{25\sqrt{5}\, e^{-25\sqrt{5}\,\pi^5}}{2\left(\frac{1}{32}\left(\sqrt{5}-1\right)^5+5\, e^{-25\sqrt{5}\,\pi^5}\right)}$$

Decimal approximation:

$1.0156731238678143887477757629564691789882352909878 4\ldots \times 10^{-7427}$

Input interpretation:

$$\left(1\Big/\left(\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\, e^{\left(-\sqrt{5}\,\pi\right)^5}\right)-\frac{9.99290225070718723070536304129457122742436976265255}{10^{7428}}-\frac{1.01567312386781438874777576295646917898823529098784}{10^{7427}}\right)\right)\text{^}(1/5)$$

(((((1/(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))-(9.992902250707187230705363041294571227424369762652555 × 10^-7428) -(1.01567312386781438874777576295646917898823529098784 × 10^-7427))))))^1/5

Result:

1.6180339887498948482045868343656381177203091798057628 62135...

1.61803398874989...

Or:

((((1/(((1/32(-1+sqrt(5))^5+5*(e^((-sqrt(5)*Pi))^5)))-(-1.6382898797095665677239458827012056245798314722584 × 10^-7429)))^1/5

Input interpretation:

$$\sqrt[5]{\frac{1}{\left(\frac{1}{32}\left(-1+\sqrt{5}\right)^5+5\,e^{\left(-\sqrt{5}\,\pi\right)^5}\right)--\frac{1.6382898797095665677239458827012056245798314722584}{10^{7429}}}}$$

Result:

1.618033988749894848204586834365638117720309179805762862135...

The result, thence, is:

1.6180339887498948482045868343656381177203091798057628

This is a wonderful golden ratio, fundamental constant of various fields of mathematics and physics

Possible closed forms:

$\phi \approx$ 1.618033988749894848204586834365638117720309179805762862135

$\Phi + 1 \approx$ 1.618033988749894848204586834365638117720309179805762862135

$\frac{1}{\Phi} \approx$ 1.618033988749894848204586834365638117720309179805762862135

We have the following Ramanujan taxicab number

$$9^3+10^3=12^3+1$$

729 + 1000 = 1728 + 1

1729

Observations

Figs.

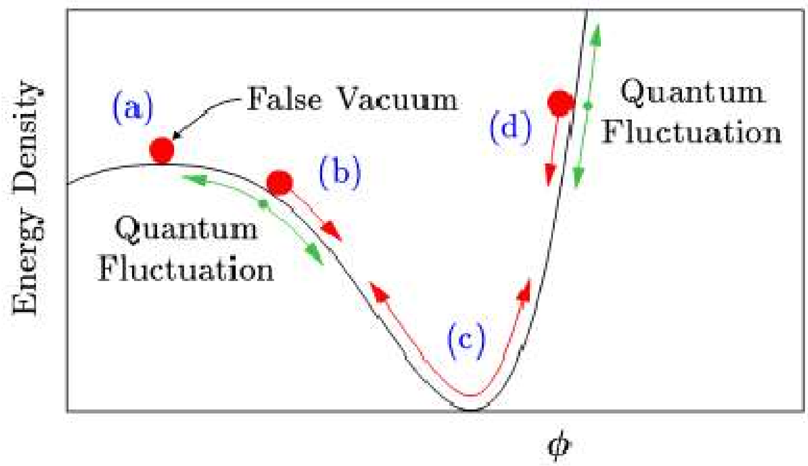
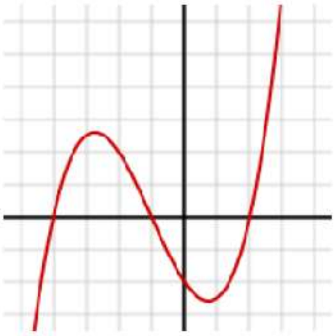


FIG. 1: In simple inflationary models, the universe at early times is dominated by the potential energy density of a scalar field, ϕ. Red arrows show the classical motion of ϕ. When ϕ is near region (a), the energy density will remain nearly constant, $\rho \cong \rho_f$, even as the universe expands. Moreover, cosmic expansion acts like a frictional drag, slowing the motion of ϕ: Even near regions (b) and (d), ϕ behaves more like a marble moving in a bowl of molasses, slowly creeping down the side of its potential, rather than like a marble sliding down the inside of a polished bowl. During this period of "slow roll," ρ remains nearly constant. Only after ϕ has slid most of the way down its potential will it begin to oscillate around its minimum, as in region (c), ending inflation.



Graph of a cubic function with 3 real roots (where the curve crosses the horizontal axis at $y = 0$). The case shown has two critical points. Here the function is $f(x) = (x^3 + 3x^2 - 6x - 8)/4$.

The ratio between M_0 and q

$$M_0 = \sqrt{3q^2 - \Sigma^2},$$

$$q = \frac{(3\sqrt{3})\, M_s}{2}.$$

i.e. the gravitating mass M_0 and the Wheelerian mass q of the wormhole, is equal to:

$$\frac{\sqrt{3\,(2.17049 \times 10^{37})^2 - 0.001^2}}{\frac{1}{2}\,((3\sqrt{3})\,(4.2 \times 10^6 \times 1.9891 \times 10^{30}))}$$

1.7320507879051944207039476256710181600835665488020824605 20...

1.7320507879

$1.7320507879 \approx \sqrt{3}$ that is the ratio between the gravitating mass M_0 and the Wheelerian mass q of the wormhole

We note that:

$$\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)-\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right)$$

i is the imaginary unit

$i\sqrt{3}$

1.7320508075688772935274463415058723669428052538103806280558... i

$r \approx 1.73205$ (radius), $\theta = 90°$ (angle)

1.73205

This result is very near to the ratio between M_0 and q, that is equal to 1.7320507879 $\approx \sqrt{3}$

With regard $\sqrt{3}$, we note that is a fundamental value of the formula structure that we need to calculate a Cubic Equation

We have that the previous result

$$\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)-\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right) = i\sqrt{3} =$$

$=$ 1.7320508075688772935274463415058723669428052538103806280558... i

$r \approx 1.73205$ (radius), $\theta = 90°$ (angle)

can be related with:

$$u^2(-u)\left(\frac{1}{2}\pm\frac{i\sqrt{3}}{2}\right)+v^2(-v)\left(\frac{1}{2}\pm\frac{i\sqrt{3}}{2}\right)=q$$

Considering:

$$(-1)\left(\frac{1}{2}-\frac{i\sqrt{3}}{2}\right)-(-1)\left(\frac{1}{2}+\frac{i\sqrt{3}}{2}\right)=q$$

$$= i\sqrt{3} = 1.7320508075688772935274463415058723669428052538103806280558 \ldots i$$

$r \approx 1.73205$ (radius), $\theta = 90°$ (angle)

Thence:

$$\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)-\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right) \Rightarrow$$

$$\Rightarrow (-1)\left(\frac{1}{2}-\frac{i\sqrt{3}}{2}\right)-(-1)\left(\frac{1}{2}+\frac{i\sqrt{3}}{2}\right)=q=1.73205 \approx \sqrt{3}$$

We observe how the graph above, concerning the cubic function, is very similar to the graph that represent the scalar field (in red). It is possible to hypothesize that cubic functions and cubic equations, with their roots, are connected to the scalar field.

From:
https://www.scientificamerican.com/article/mathematics-ramanujan/?fbclid=IwAR2caRXrn_RpOSvJ1QxWsVLBcJ6KVgd_Af_hrmDYBNyU8mpSjRs1BDeremA

Ramanujan's statement concerned the deceptively simple concept of partitions—the different ways in which a whole number can be subdivided into smaller numbers. Ramanujan's original statement, in fact, stemmed from the observation of patterns, such as the fact that p(9) = 30, p(9 + 5) = 135, p(9 + 10) = 490, p(9 + 15) = 1,575 and so on are all divisible by 5. Note that here the n's come at intervals of five units.

Ramanujan posited that this pattern should go on forever, and that similar patterns exist when 5 is replaced by 7 or 11—there are infinite sequences of p(n) that are all divisible by 7 or 11, or, as mathematicians say, in which the "moduli" are 7 or 11.

Then, in nearly oracular tone Ramanujan went on: "There appear to be corresponding properties," he wrote in his 1919 paper, "in which the moduli are *powers of 5, 7 or 11...and no simple properties for any moduli involving primes other than these three." (Primes are whole numbers that are only divisible by themselves or by 1.) Thus, for instance, there should be formulas for an infinity of n's separated by 5^3 = 125 units, saying that the corresponding p(n)'s should all be divisible by 125. In the past methods developed to understand partitions have later been applied to physics problems such as the theory of the strong nuclear force or the entropy of black holes.*

From Wikipedia

In particle physics, Yukawa's interaction or Yukawa coupling, named after Hideki Yukawa, is an interaction between a scalar field ϕ and a Dirac field ψ. The Yukawa interaction can be used to describe the nuclear force between nucleons (which are fermions), mediated by pions (which are pseudoscalar mesons). The Yukawa interaction is also used in the Standard Model to describe the coupling between the Higgs field and massless quark and lepton fields (i.e., the fundamental fermion particles). Through spontaneous symmetry breaking, these fermions acquire a mass proportional to the vacuum expectation value of the Higgs field.

Can be this the motivation that from the development of the Ramanujan's equations we obtain results very near to the dilaton mass calculated as a type of Higgs boson: 125 GeV for T = 0 and to the Higgs boson mass 125.18 GeV and practically equal to the rest mass of Pion meson 139.57 MeV

Note that:

$$g_{22} = \sqrt{(1+\sqrt{2})}.$$

Hence

$$\begin{aligned} 64 g_{22}^{24} &= e^{\pi\sqrt{22}} - 24 + 276 e^{-\pi\sqrt{22}} - \cdots, \\ 64 g_{22}^{-24} &= \qquad\qquad\quad 4096 e^{-\pi\sqrt{22}} + \cdots, \end{aligned}$$

so that

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372 e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}.$$

Hence

$$e^{\pi\sqrt{22}} = 2508951.9982\ldots.$$

Thence:

$$64 g_{22}^{-24} = 4096 e^{-\pi\sqrt{22}} + \cdots$$

And

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372 e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}$$

That are connected with 64, 128, 256, 512, 1024 and 4096 = 64^2

(Modular equations and approximations to π - S. Ramanujan - Quarterly Journal of Mathematics, XLV, 1914, 350 – 372)

All the results of the most important connections are signed in blue throughout the drafting of the paper. We highlight as in the development of the various equations we use always the constants π, ϕ, 1/ϕ, the Fibonacci and Lucas numbers, linked to the golden ratio, that play a fundamental role in the development, and therefore, in the final results of the analyzed expressions.

In mathematics, the Fibonacci numbers, commonly denoted F_n, form a sequence, called the Fibonacci sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1. Fibonacci numbers are strongly related to the golden ratio: Binet's formula expresses the nth Fibonacci number in terms of n and the golden ratio, and implies that the ratio of two consecutive Fibonacci numbers tends to the golden ratio as n increases.
Fibonacci numbers are also closely related to Lucas numbers ,in that the Fibonacci and Lucas numbers form a complementary pair of Lucas sequences

The beginning of the sequence is thus:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, 514229, 832040, 1346269, 2178309, 3524578, 5702887, 9227465, 14930352, 24157817, 39088169, 63245986, 102334155...

The Lucas numbers or Lucas series are an integer sequence named after the mathematician François Édouard Anatole Lucas (1842–91), who studied both that sequence and the closely related Fibonacci numbers. Lucas numbers and Fibonacci numbers form complementary instances of Lucas sequences.

The Lucas sequence has the same recursive relationship as the Fibonacci sequence, where each term is the sum of the two previous terms, but with different starting values. This produces a sequence where the ratios of successive terms approach the golden ratio, and in fact the terms *themselves are roundings of integer powers of the golden ratio.[1] The sequence also has a variety of relationships with the Fibonacci numbers, like the fact that adding any two Fibonacci numbers two terms apart in the Fibonacci sequence results in the Lucas number in between.*

The sequence of Lucas numbers is:

2, 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207, 3571, 5778, 9349, 15127, 24476, 39603, 64079, 103682, 167761, 271443, 439204, 710647, 1149851, 1860498, 3010349, 4870847, 7881196, 12752043, 20633239, 33385282, 54018521, 87403803……

All Fibonacci-like integer sequences appear in shifted form as a row of the Wythoff array; the Fibonacci sequence itself is the first row and the Lucas sequence is the second row. Also like all Fibonacci-like integer sequences, the ratio between two consecutive Lucas numbers converges to the golden ratio.

A Lucas prime is a Lucas number that is prime. The first few Lucas primes are:

2, 3, 7, 11, 29, 47, 199, 521, 2207, 3571, 9349, 3010349, 54018521, 370248451, 6643838879, ... (sequence A005479 in the OEIS).

In geometry, a golden spiral is a logarithmic spiral whose growth factor is φ, the golden ratio.[1] That is, a golden spiral gets wider (or further from its origin) by a factor of φ for every quarter turn it makes. Approximate logarithmic spirals can occur in nature, for example the arms of spiral galaxies[3] - golden spirals are one special case of these logarithmic spirals

We note how the following three values: 137.508 (golden angle), 139.57 (mass of the Pion - meson Pi) and 125.18 (mass of the Higgs boson), are connected to each other. In fact, just add 2 to 137.508 to obtain a result very close to the mass of the Pion and subtract 12 to 137.508 to obtain a result that is also very close to the mass of the Higgs boson. We can therefore hypothesize that it is the golden angle (and the related golden ratio inherent in it) to be a fundamental ingredient both in the structures of the microcosm and in those of the macrocosm.

References

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