On the new mathematical connections between some Ramanujan equations and some formulas concerning various sectors of String Theory and Particle Physics

Michele Nardelli[1], Antonio Nardelli

Abstract

In this research thesis, we have analyzed various Ramanujan equations and described the new possible mathematical connections with some sectors of string theory and Particle Physics

[1] M.Nardelli have studied by Dipartimento di Scienze della Terra Università degli Studi di Napoli Federico II, Largo S. Marcellino, 10 - 80138 Napoli, Dipartimento di Matematica ed Applicazioni "R. Caccioppoli" - Università degli Studi di Napoli "Federico II" – Polo delle Scienze e delle Tecnologie Monte S. Angelo, Via Cintia (Fuorigrotta), 80126 Napoli, Italy

https://en.wikipedia.org/wiki/Srinivasa_Ramanujan

From:

For example, in the IIA theory the F-terms of the low energy theory involving only Kahler moduli are of the form $\mathcal{F}_g R_+^2 F_+^{2g-2}$. Here, + denotes the self-dual parts of the curvature, R denotes the Riemann tensor and F the graviphoton field strength. (We will be considering the euclidean effective action.) [4] The coefficient, $\mathcal{F}_g$ is purely a function of Kahler moduli. Rather remarkably, the $\mathcal{F}_g$ can be computed using a much simpler string theory, an $N = 2$ topological string, with the Calabi-Yau threefold as its target space [6][7]. In fact, $\mathcal{F}_g$ is the partition function of the perturbative A-model topological closed string theory at genus g.

In the limit of large volume (radius) of the Calabi-Yau three-fold, the $\mathcal{F}_g$ admits a purely topological interpretation: It is roughly given by the worldsheet instanton sum

$$\mathcal{F}_g = \sum_{C_g} exp(-A_C). \tag{2.1}$$

in the large volume limit, since it is not suppressed by the area exponent.) In this case, the relevant moduli space is the product, $\mathcal{M}_g$ times the Calabi-Yau threefold K itself (corresponding to the choice of the point in the target space). $\mathcal{M}_g$ is the familiar moduli space of all Riemann surfaces of genus g. Then the appropriately weighted contribution to $\mathcal{F}_g$ from constant maps (which, as we remarked, is the leading contribution for large volumes), was found by [6] to be

$$\mathcal{F}_g = \frac{1}{2}\chi_K \int_{\mathcal{M}_g} c_{g-1}^3 + O(exp(-A)) \tag{2.2}$$

Here χ_K denotes the Euler characteristic of K and c_{g-1} denotes the $(g-1)$-th chern class of the Hodge bundle over $\mathcal{M}_g$ (The Hodge bundle is the g-dimensional holomorphic vector bundle over $\mathcal{M}_g$ locally spanned by the g holomorphic 1-forms on the genus g Riemann surface $g > 1$). $\int_{\mathcal{M}_g} c_{g-1}^3$ has only very recently been computed by mathematicians to be ([8])

$$\int_{\mathcal{M}_g} c_{g-1}^3 = \frac{B_g}{2g(2g-2)} \frac{B_{g-1}}{(2g-2)!} = (-1)^{g-1}\chi_g \frac{2\zeta(2g-2)}{(2\pi)^{2g-2}}. \tag{2.3}$$

Here $\chi_g = (-1)^{g-1}\frac{B_g}{2g(2g-2)}$ is the euler characteristic of $\mathcal{M}_g$. (B_g are the Bernoulli numbers taken here to be all positive.) The second way of writing this expression in terms of χ_g and the Riemann zeta function ζ was motivated by the physical derivation we shall present in this paper for this leading contribution.

If we take $\chi(T^*S^3) = -2$ (based on the fact that it is non-compact and that there is one complex deformation) we obtain

$$\int_{\mathcal{M}_g} c_{g-1}^3 - C_{g,h\to 0} - (-1)^{g-1}\chi_g \frac{\zeta(2g-2)}{(2\pi)^{2g-2}}$$

in agreement with the mathematical result Eq.(2.3) !

From:

Some properties of Bernoulli's numbers – Srinivasa Ramanujan
Journal of the Indian Mathematical Society, III, 1911, 219 – 234

Approximate ratio of any B to previous B	lies between*	Hence the exact value is
B_2	0 and 1 ...	$1 - \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$
$B_4 = \frac{3\cdot 4}{4\pi^2} B_2$ ...	0 and 1 ...	$\frac{1}{2} + \frac{1}{3} + \frac{1}{5} - 1 = \frac{1}{30}$
$B_6 = \frac{5\cdot 6}{4\pi^2} B_4$ ...	0 and 1 ...	$1 - \frac{1}{2} - \frac{1}{3} - \frac{1}{7} = \frac{1}{42}$
$B_8 = \frac{7\cdot 8}{4\pi^2} B_6$ ...	0 and 1 ...	$\frac{1}{2} + \frac{1}{3} + \frac{1}{5} - 1 = \frac{1}{30}$
$B_{10} = \frac{9\cdot 10}{4\pi^2} B_8$ ...	0 and 1 ...	$1 - \frac{1}{2} - \frac{1}{3} - \frac{1}{11} = \frac{5}{66}$
$B_{12} = \frac{11\cdot 12}{4\pi^2} B_{10}$ ...	0 and 1 ...	$\frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \frac{1}{13} - 1 = \frac{691}{2730}$
$B_{14} = \frac{13\cdot 14}{4\pi^2} B_{12}$ ...	0 and 2 ...	$2 - \frac{1}{2} - \frac{1}{3} = \frac{7}{6}$
$B_{16} = \frac{15\cdot 16}{4\pi^2} B_{14}$ ...	7 and 8 ...	$6 + \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{17} = \frac{3617}{510}$
$B_{18} = \frac{17\cdot 18}{4\pi^2} B_{16}$ ...	54 and 55 ...	$56 - \frac{1}{2} - \frac{1}{3} - \frac{1}{7} - \frac{1}{19} = \frac{43867}{798}$
$B_{20} = \frac{19\cdot 20}{4\pi^2} B_{18}$ ...	529 and 530 ...	$528 + \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{11} = \frac{174611}{330}$
... ...		

From (2.3):

$$\int_{\mathcal{M}_g} c_{g-1}^3 = \frac{B_g}{2g(2g-2)} \frac{B_{g-1}}{(2g-2)!} = (-1)^{g-1}\chi_g \frac{2\zeta(2g-2)}{(2\pi)^{2g-2}}.$$

we obtain:

((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!))))

Input:

$$\frac{\frac{1}{42}}{2\times 6\,(2\times 6-2)} \times \frac{\frac{1}{30}}{(2\times 4-2)!}$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{1}{108\,864\,000}$$

Decimal approximation:

- More digits

$9.185773074661963550852439741328630217519106407995296 8\ldots \times 10^{-9}$

Open code

9.1857730… * 10^-9

Series representation:

$$\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))} = \frac{1}{151\,200 \sum_{k=0}^{\infty} \frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $n_0 \to 6)$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))} = \frac{1}{151\,200 \int_0^{\infty} e^{-t}\,t^6\,dt}$$

Open code

$$\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))} = \frac{1}{151\,200 \int_0^{1} \log^6\left(\frac{1}{t}\right)dt}$$

Open code

$$\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))} = \frac{1}{151\,200 \left(\int_1^{\infty} e^{-t}\,t^6\,dt + \sum_{k=0}^{\infty} \frac{(-1)^k}{(7+k)\,k!}\right)}$$

Open code

- $\log(x)$ is the natural logarithm
-

10*(((((((((((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!)))))))))))))^1/16

Input:

$$10\sqrt[16]{\frac{\frac{1}{42}}{2\times 6\,(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}}$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{2^{7/16}\times 5^{13/16}}{3^{5/16}\sqrt[16]{7}}$$

Decimal approximation:

- More digits

3.145536521967677722116952952577541610511229966798556169952...

Open code

Alternate form:

root of $1701\,x^{16}-156\,250\,000\,000$ near $x=3.14554$

Open code

3.14553652….

2*10*((((((((((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!)))))))))))))^1/16

Input:

$$2\times 10\sqrt[16]{\frac{\frac{1}{42}}{2\times 6\,(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}}$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{2\times 2^{7/16}\times 5^{13/16}}{3^{5/16}\sqrt[16]{7}}$$

Decimal approximation:

- More digits

6.291073043935355444233905905155083221022459933597112339905...

Open code

6.29107304…

Series representation:

$$2\times 10\sqrt[16]{\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))}}=\frac{2\times 2^{11/16}\times 5^{7/8}\sqrt[16]{\frac{1}{\sum_{k=0}^{\infty}\frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}}}{3^{3/16}\sqrt[16]{7}}$$

for $((n_0\notin\mathbb{Z}$ or $n_0\geq 0)$ and $n_0\to 6)$

Open code

- $\mathbb{Z}$ is the set of integers
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Integral representations:

$$2 \times 10 \sqrt[16]{\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))}} = \frac{2\times 2^{11/16}\times 5^{7/8}\sqrt[16]{\frac{1}{\int_0^1 \log^6\left(\frac{1}{t}\right)dt}}}{3^{3/16}\sqrt[16]{7}}$$

Open code

$$2 \times 10 \sqrt[16]{\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))}} = \frac{2\times 2^{11/16}\times 5^{7/8}\sqrt[16]{\frac{1}{\int_0^\infty e^{-t}\,t^6\,dt}}}{3^{3/16}\sqrt[16]{7}}$$

Open code

$$2 \times 10 \sqrt[16]{\frac{1}{(30\,(2\times 4-2)!)\,42\,(2\times 6\,(2\times 6-2))}} = \frac{2\times 2^{11/16}\times 5^{7/8}\sqrt[16]{\frac{1}{\int_1^\infty e^{-t}\,t^6\,dt+\sum_{k=0}^\infty \frac{(-1)^k}{(7+k)k!}}}}{3^{3/16}\sqrt[16]{7}}$$

1/6((((((10*((((((((((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!)))))))))))^1/16))))))^2

Input:

$$\frac{1}{6}\left(10\sqrt[16]{\frac{\frac{1}{42}}{2\times 6\,(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}}\right)^2$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{5\times 5^{5/8}}{3\times 3^{5/8}\sqrt[8]{14}}$$

Decimal approximation:

- More digits

1.64906668505419112148388344170721876332826610590832166921...

Open code

1.649066….

Series representation:

$$\frac{1}{6}\left(10\sqrt[16]{\frac{1}{(42\,(2\times 6\,(2\times 6-2)))\,(30\,(2\times 4-2)!)}}\right)^2 = \frac{5\left(\frac{2}{3}\right)^{3/8} 5^{3/4}\sqrt[8]{\frac{1}{\sum_{k=0}^\infty \frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}}}{3\sqrt[8]{7}}$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $n_0 \to 6)$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{1}{6}\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2=\frac{5\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_0^1\log^6\left(\frac{1}{t}\right)dt}}}{3\sqrt[8]{7}}$$

Open code

$$\frac{1}{6}\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2=\frac{5\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_0^\infty e^{-t}t^6\,dt}}}{3\sqrt[8]{7}}$$

Open code

$$\frac{1}{6}\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2=\frac{5\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_1^\infty e^{-t}t^6\,dt+\sum_{k=0}^\infty\frac{(-1)^k}{(7+k)k!}}}}{3\sqrt[8]{7}}$$

Further, we obtain:

(55+21+3)+10^3* 1/6(((((((10*((((((((((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!)))))))))))))^1/16))))))^2

Input:

$$(55+21+3)+10^3\times\frac{1}{6}\left(10\sqrt[16]{\frac{\frac{1}{42}}{2\times 6(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}}\right)^2$$

Open code

- $n!$ is the factorial function

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Exact result:

$$79+\frac{2500\left(\frac{5}{3}\right)^{5/8}2^{7/8}}{3\sqrt[8]{7}}$$

Decimal approximation:

- More digits

1728.0666850541911214838834417072187633282661059083216692 1...

Open code

1728.0666…

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

Series representation:

$$(55+21+3)+\frac{1}{6}\times 10^3\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2 = 79+\frac{5000\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\sum_{k=0}^{\infty}\frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}}}{3\sqrt[8]{7}} \quad \text{for } ((n_0\notin\mathbb{Z} \text{ or } n_0\geq 0) \text{ and } n_0\to 6)$$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

Integral representations:

$$(55+21+3)+\frac{1}{6}\times 10^3\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2 = 79+\frac{5000\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_0^1\log^6\left(\frac{1}{t}\right)dt}}}{3\sqrt[8]{7}}$$

Open code

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$$(55+21+3)+\frac{1}{6}\times 10^3\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2 = 79+\frac{5000\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_0^{\infty}e^{-t}\,t^6\,dt}}}{3\sqrt[8]{7}}$$

Open code

$$(55+21+3)+\frac{1}{6}\times 10^3\left(10\sqrt[16]{\frac{1}{(42(2\times 6(2\times 6-2)))(30(2\times 4-2)!)}}\right)^2 =$$

$$79+\frac{5000\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\int_1^\infty e^{-t}t^6\,dt+\sum_{k=0}^\infty\frac{(-1)^k}{(7+k)k!}}}}{3\sqrt[8]{7}}$$

With regard the above Ramanujan paper, we have that:

$$\begin{aligned}\frac{B_{2p}\theta}{(2p-1)2pn^{2p-1}} &= \frac{B_{2p}}{(2p-1)2pn^{2p-1}}-\frac{B_{2p+2}}{(2p+1)(2p+2)n^{2p+1}}+\cdots\\ &= -\frac{1}{\pi}\int_0^\infty\frac{x^{2p-2}}{n^{2p-1}}\log(1-e^{-2\pi x})dx+\frac{1}{\pi}\int_0^\infty\frac{x^{2p}}{n^{2p+1}}\log(1-e^{-2\pi x})dx-\cdots\\ &= -\frac{1}{\pi}\int_0^\infty\left(\frac{x^{2p-2}}{n^{2p-1}}-\frac{x^{2p}}{n^{2p+1}}+\cdots\right)\log(1-e^{-2\pi x})dx\\ &= -\frac{1}{\pi}\int_0^\infty\frac{x^{2p-2}}{n^{2p-3}(n^2+x^2)}\log(1-e^{-2\pi x})dx\\ &= -\int_0^\infty\frac{x^{2p-2}\log(1-e^{-2\pi nx})}{\pi(1+x^2)}dx.\end{aligned}$$

If p =2, n = 4:
integrate (((x^2*ln(1-e^(-8Pix))) / (((Pi(1+x^2))) x

we obtain:

Input:

$$\int\frac{x^2\log(1-e^{-8\pi x})}{(\pi(1+x^2))x}\,dx$$

Definite integral:

- More digits

$$\int_0^\infty\frac{x\log(1-e^{-8\pi x})}{\pi(1+x^2)}\,dx\approx -0.00060093299578342109 2\ldots$$

Open code

-(-0.00060093299578342109 2) = 0.00060093299578342109 2

1 / (((((10^3 * -(-0.00060093299578342109 2))))))

Input interpretation:

$$\frac{1}{10^3\times(-1)\times(-0.00060093299578342109 2)}$$

Open code

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Result:

- More digits

1.664079035461058990220349678761034471144625978751981534637...

Open code

$$1.664079.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$$

For p = 2, x = 3 and n = 4, we obtain:

-integrate [((3^2*ln(1-e^(-24Pi))) / ((Pi(1+3^2)))]x

Indefinite integral:

- Approximate form
- Step-by-step solution

$$-\int \frac{(3^2 \log(1 - e^{-24\pi}))\, x}{\pi (1 + 3^2)}\, dx = -\frac{9 x^2 \log(1 - e^{-24\pi})}{20 \pi} + \text{constant}$$

Open code

Input:

$$-\frac{9 x^2 \log(1 - e^{-24\pi})}{20 \pi}$$

Open code

- $\log(x)$ is the natural logarithm

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Geometric figure:

- Properties

parabola

Alternate forms:

$$x^2 \left(\frac{54}{5} - \frac{9 \log(e^{24\pi} - 1)}{20 \pi}\right)$$

$$-\frac{9 x^2 (\log(e^{24\pi} - 1) - 24 \pi)}{20 \pi}$$

For x = 3, we obtain:

Input:

$$-\frac{9 \times 3^2 \log(1 - e^{-24\pi})}{20 \pi}$$

Open code

- $\log(x)$ is the natural logarithm

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Exact result:

$$-\frac{81 \log(1 - e^{-24\pi})}{20 \pi}$$

Decimal approximation:

- More digits

$2.3188500111054407104567121817373759288951359286929464\ldots \times 10^{-33}$

Open code

2.31885… * 10^{-33}

Series representations:

- More

$$-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi} = \frac{81 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}{20\pi}$$

Open code

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$$-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi} = -\frac{81\left(\log(z_0) + \left\lfloor \frac{\arg(1-e^{-24\pi}-z_0)}{2\pi} \right\rfloor \left(\log\left(\frac{1}{z_0}\right) + \log(z_0)\right) - \sum_{k=1}^{\infty} \frac{(-1)^k (1-e^{-24\pi}-z_0)^k z_0^{-k}}{k}\right)}{20\pi}$$

Open code

$$-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi} = -\frac{81\left(\log(2) - \frac{1}{2}(1+e^{-24\pi}) \sum_{k=0}^{\infty} \frac{2^{-2k} T_k(e^{-24\pi})\, {}_3F_2\left(\frac{1}{2}+k, 1+k, 1+k; 2+k, 1+2k; 1\right)(2-\delta_k)}{1+k}\right)}{20\pi}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- $T_n(x)$ is the Chebyshev polynomial of the first kind
- ${}_pF_q(a_1, \ldots, a_p; b_1, \ldots, b_q; z)$ is the generalized hypergeometric function
- δ_{n_1, n_2} is the Kronecker delta function
- More information

Integral representation:

$$-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi} = -\frac{81}{20\pi} \int_1^{1-e^{-24\pi}} \frac{1}{t}\, dt$$

Open code

And:

1/((143+144)/2) * -(9 *3^2 log(1 - e^(-24 π)))/(20 π)

Input:

$$\frac{1}{\frac{143+144}{2}}\left(-\frac{9\times 3^2\log(1-e^{-24\pi})}{20\pi}\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Exact result:

$$-\frac{81\log(1-e^{-24\pi})}{2870\pi}$$

Decimal approximation:

- More digits

$1.6159233526867182651266286980748264312858090095421229... \times 10^{-35}$

Open code

$1.615923352... * 10^{-35}$ result very near to the Planck length

$1\ \ell_P \approx 1.616\,229(38)\times 10^{-35}$ m

Series representations:

- More

$$-\frac{9\times 3^2\log(1-e^{-24\pi})}{\frac{1}{2}(20\pi)(143+144)} = \frac{81\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}{2870\pi}$$

Open code

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$$-\frac{9\times 3^2\log(1-e^{-24\pi})}{\frac{1}{2}(20\pi)(143+144)} = -\frac{81\left(\log(z_0)+\left\lfloor\frac{\arg(1-e^{-24\pi}-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(1-e^{-24\pi}-z_0)^k z_0^{-k}}{k}\right)}{2870\pi}$$

Open code

$$-\frac{9\times 3^2\log(1-e^{-24\pi})}{\frac{1}{2}(20\pi)(143+144)} = -\frac{81\left(\log(2)-\frac{1}{2}(1+e^{-24\pi})\sum_{k=0}^{\infty}\frac{2^{-2k}T_k(e^{-24\pi})\,{}_3F_2\left(\frac{1}{2}+k,1+k,1+k;2+k,1+2k;1\right)(2-\delta_k)}{1+k}\right)}{2870\pi}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function

- $T_n(x)$ is the Chebyshev polynomial of the first kind
- ${}_pF_q(a_1, \ldots, a_p; b_1, \ldots, b_q; z)$ is the generalized hypergeometric function
- δ_{n_1,n_2} is the Kronecker delta function
- More information

Integral representation:

$$-\frac{9\times 3^2 \log(1-e^{-24\pi})}{\frac{1}{2}(20\pi)(143+144)} = -\frac{81}{2870\pi}\int_1^{1-e^{-24\pi}} \frac{1}{t}\,dt$$

10^3 * 7((((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))))^1/9

Input:

$$10^3 \times 7\sqrt[9]{-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}}$$

Open code

- $\log(x)$ is the natural logarithm

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Exact result:

$$700\times 2^{7/9}\times 3^{4/9}\times 5^{8/9}\sqrt[9]{-\frac{\log(1-e^{-24\pi})}{\pi}}$$

Decimal approximation:

- More digits

1.655835633189835065772756044462298233459088294770562888908...

Open code

1.65583563…. result very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

Series representations:

- More

$$10^3 \times 7\sqrt[9]{-\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}} = \frac{700\times 2^{7/9}\times 3^{4/9}\times 5^{8/9}\sqrt[9]{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}}{\sqrt[9]{\pi}}$$

Open code

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$$10^3 \times 7 \sqrt[9]{-\frac{9 \times 3^2 \log(1-e^{-24\pi})}{20\pi}} = \frac{700 \times 2^{7/9} \times 3^{4/9} \times 5^{8/9} \sqrt[9]{-2 i \pi \left\lfloor \frac{\arg(1-e^{-24\pi}-x)}{2\pi} \right\rfloor - \log(x) + \sum_{k=1}^{\infty} \frac{(-1)^k (1-e^{-24\pi}-x)^k x^{-k}}{k}}}{\sqrt[9]{\pi}}$$

for $x < 0$

Open code

$$10^3 \times 7 \sqrt[9]{-\frac{9 \times 3^2 \log(1-e^{-24\pi})}{20\pi}} = \frac{1}{\sqrt[9]{\pi}} 700 \times 2^{7/9} \times 3^{4/9} \times 5^{8/9} \left(-\log(z_0) - \left\lfloor \frac{\arg(1-e^{-24\pi}-z_0)}{2\pi} \right\rfloor \left(\log\left(\frac{1}{z_0}\right) + \log(z_0)\right) + \sum_{k=1}^{\infty} \frac{(-1)^k (1-e^{-24\pi}-z_0)^k z_0^{-k}}{k}\right) \wedge (1/9)$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- More information

Integral representation:

$$10^3 \times 7 \sqrt[9]{-\frac{9 \times 3^2 \log(1-e^{-24\pi})}{20\pi}} = \frac{700 \times 2^{7/9} \times 3^{4/9} \times 5^{8/9} \sqrt[9]{-\int_1^{1-e^{-24\pi}} \frac{1}{t}\, dt}}{\sqrt[9]{\pi}}$$

Now, we have that:

$$\begin{aligned}\frac{B_{2p}\theta}{n^{2p+1}} &= \frac{B_{2p}}{n^{2p+1}} - \frac{B_{2p+2}}{n^{2p+3}} + \cdots \\ &= 4\pi \int_0^\infty \frac{x^{2p}}{n^{2p+1}(e^{\pi x} - e^{-\pi x})^2} dx - 4\pi \int_0^\infty \frac{x^{2p+2}}{n^{2p+3}(e^{\pi x} - e^{-\pi x})^2} dx + \cdots \\ &= \pi \int_0^\infty \left(\frac{x^{2p}}{n^{2p+1}} - \frac{x^{2p+2}}{n^{2p+3}} + \cdots \right) \frac{dx}{\sinh^2 \pi x} \\ &= \pi \int_0^\infty \frac{x^{2p}}{n^{2p-1}(n^2+x^2)} \frac{dx}{\sinh^2 \pi x} = \int_0^\infty \frac{\pi x^{2p}}{(1+x^2)\sinh^2 \pi n x} dx.\end{aligned}$$

For p = 2, n = 4, x = 3, we obtain:

integrate [((Pi*3^4)) / (((1+3^2)*sinh^2(4Pi*3)))]x

Indefinite integral:

- Approximate form
- Step-by-step solution

$$\int \frac{(\pi\, 3^4)\, x}{(1+3^2)\sinh^2(4\,\pi\, 3)}\, dx = \frac{81}{20}\,\pi\, x^2 \operatorname{csch}^2(12\,\pi) + \text{constant}$$

Open code

- $\sinh(x)$ is the hyperbolic sine function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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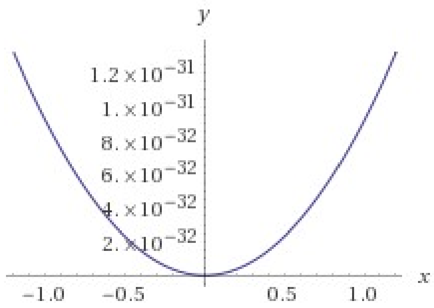
Plot of the integral:



(x from −1.2 to 1.2)

For x=3, we obtain:

81/20 π 3^2 csch^2(12 π)

Input:

$$\frac{81}{20}\,\pi \times 3^2 \operatorname{csch}^2(12\,\pi)$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$\frac{729}{20} \pi \operatorname{csch}^2(12 \pi)$$

Decimal approximation:

- More digits

$8.2390076190260516682881494442507276550834415664265693... \times 10^{-31}$

$8.239007619... * 10^{-31}$

((((81/20 π 3^2 csch^2(12 π)))))^1/144

Input:

$$\sqrt[144]{\frac{81}{20} \pi \times 3^2 \operatorname{csch}^2(12 \pi)}$$

Open code

- csch(x) is the hyperbolic cosecant function

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Exact result:

$$\frac{\sqrt[24]{3} \sqrt[144]{\frac{\pi}{5}} \sqrt[72]{\operatorname{csch}(12 \pi)}}{\sqrt[72]{2}}$$

Decimal approximation:

- More digits

0.61813376134185476204906344413428142648012237108405371 6310...

0.61813376... result very near to the conjugate of the golden ratio

And:

1 / ((((81/20 π 3^2 csch^2(12 π)))))^1/144

Input:

$$\frac{1}{\sqrt[144]{\frac{81}{20} \pi \times 3^2 \operatorname{csch}^2(12 \pi)}}$$

Open code

- csch(x) is the hyperbolic cosecant function

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Exact result:

$$\frac{\sqrt[144]{\frac{5}{\pi}} \sqrt[72]{2 \sinh(12 \pi)}}{\sqrt[24]{3}}$$

- sinh(x) is the hyperbolic sine function

Decimal approximation:

- More digits

1.6177728228744274276693664517553479584793598945502476 63415...

1.61777282287...

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Series representations:

- More

$$\frac{1}{\sqrt[144]{\frac{1}{20}\,\pi\,81\times 3^2\,\operatorname{csch}^2(12\,\pi)}} = \frac{\sqrt[36]{2}\,\sqrt[144]{\frac{5}{\pi}}\,\sqrt[72]{\sum_{k=0}^{\infty} I_{1+2k}(12\,\pi)}}{\sqrt[24]{3}}$$

Open code

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$$\frac{1}{\sqrt[144]{\frac{1}{20}\,\pi\,81\times 3^2\,\operatorname{csch}^2(12\,\pi)}} = \frac{\sqrt[72]{2}\,\sqrt[144]{\frac{5}{\pi}}\,\sqrt[72]{\sum_{k=0}^{\infty} \frac{(12\,\pi)^{1+2k}}{(1+2k)!}}}{\sqrt[24]{3}}$$

Open code

$$\frac{1}{\sqrt[144]{\frac{1}{20}\,\pi\,81\times 3^2\,\operatorname{csch}^2(12\,\pi)}} = \frac{\sqrt[72]{2}\,\sqrt[144]{\frac{5}{\pi}}\,\sqrt[72]{i\sum_{k=0}^{\infty} \frac{\left(\left(12-\frac{i}{2}\right)\pi\right)^{2k}}{(2k)!}}}{\sqrt[24]{3}}$$

Open code

- $I_n(z)$ is the modified Bessel function of the first kind
- $n!$ is the factorial function
- More information

Integral representations:

$$\frac{1}{\sqrt[144]{\frac{1}{20}\,\pi\,81\times 3^2\,\operatorname{csch}^2(12\,\pi)}} = \frac{\sqrt[24]{2}\,\sqrt[144]{5\,\pi}\,\sqrt[72]{\int_0^1 \cosh(12\,\pi\,t)\,dt}}{\sqrt[36]{3}}$$

Open code

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$$\frac{1}{\sqrt[144]{\frac{1}{20}\,\pi\,81\times 3^2\operatorname{csch}^2(12\,\pi)}} = \frac{\sqrt[72]{2}\,\sqrt[144]{5}\,\sqrt[72]{-i\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{e^{(36\,\pi^2)/s+s}}{s^{3/2}}\,d\,s}}{\sqrt[36]{3}} \quad \text{for } \gamma>0$$

Open code

- $\cosh(x)$ is the hyperbolic cosine function

From the two results, we obtain:

((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))) / ((((81/20 π 3^2 csch^2(12 π)))))))))

Input:

$$\frac{-\frac{9\times 3^2\log(1-e^{-24\,\pi})}{20\,\pi}}{\frac{81}{20}\,\pi\times 3^2\operatorname{csch}^2(12\,\pi)}$$

Open code

- $\log(x)$ is the natural logarithm
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$-\frac{\log(1-e^{-24\,\pi})\sinh^2(12\,\pi)}{9\,\pi^2}$$

- $\sinh(x)$ is the hyperbolic sine function

Decimal approximation:

- More digits

0.002814477323398271428996651755825760153589357812350806792...

0.002814477...

sqrt((((((((10^3((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))) / ((((81/20 π 3^2 csch^2(12 π)))))))))

Input:

$$\sqrt{10^3\times\frac{-\frac{9\times 3^2\log(1-e^{-24\,\pi})}{20\,\pi}}{\frac{81}{20}\,\pi\times 3^2\operatorname{csch}^2(12\,\pi)}}$$

Open code

- $\log(x)$ is the natural logarithm
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$\frac{10\sqrt{-10\log(1-e^{-24\,\pi})}\,\sinh(12\,\pi)}{3\,\pi}$$

- $\sinh(x)$ is the hyperbolic sine function

Decimal approximation:

- More digits

1.677640403482901167874251004758212360163251382399123745775…

Open code

1.6776404034…

Series representations:

$$\sqrt{\frac{10^3 \left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)}{\frac{1}{20}(20\pi)\left(\pi\, 81\times 3^2 \operatorname{csch}^2(12\pi)\right)}} = \frac{10\sqrt{10}\sqrt{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}\ \sum_{k=0}^{\infty}\frac{(12\pi)^{1+2k}}{(1+2k)!}}{3\pi}$$

Open code

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$$\sqrt{\frac{10^3 \left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)}{\frac{1}{20}(20\pi)\left(\pi\, 81\times 3^2 \operatorname{csch}^2(12\pi)\right)}} = \frac{10\, i\sqrt{10}\sqrt{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}\ \sum_{k=0}^{\infty}\frac{\left(\left(12-\frac{i}{2}\right)\pi\right)^{2k}}{(2k)!}}{3\pi}$$

Open code

$$\sqrt{\frac{10^3 \left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)}{\frac{1}{20}(20\pi)\left(\pi\, 81\times 3^2 \operatorname{csch}^2(12\pi)\right)}} =$$

$$20\sqrt{10\pi}\sqrt{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}\ \sum_{j=0}^{\infty}\operatorname{Res}_{s=-j}\frac{(-36)^{-s}\,\pi^{-2s}\,\Gamma(s)}{\Gamma\left(\frac{3}{2}-s\right)}$$

- $n!$ is the factorial function
- $\Gamma(x)$ is the gamma function
- $\operatorname{Res}_{z=z_0} f$ is a complex residue
- More information

Integral representations:

$$\sqrt{\frac{10^3 \left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)}{\frac{1}{20}(20\pi)\left(\pi\, 81\times 3^2 \operatorname{csch}^2(12\pi)\right)}} = 40\sqrt{10}\sqrt{-\int_1^{1-e^{-24\pi}}\frac{1}{t}\,dt}\ \int_0^1 \cosh(12\pi t)\,dt$$

Open code

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$$\sqrt{\frac{10^3 \left(-\left(9 \times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)}{\frac{1}{20}(20\pi)\left(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi)\right)}} =$$

$$-10\, i \sqrt{\frac{10}{\pi}} \left(\int_{-i\infty+\gamma}^{i\infty+\gamma} \frac{e^{(36\pi^2)/s+s}}{s^{3/2}}\, ds\right) \sqrt{-\int_1^{1-e^{-24\pi}} \frac{1}{t}\, dt} \quad \text{for } \gamma > 0$$

Open code

- cosh(x) is the hyperbolic cosine function

((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π)))))

Input:

$$-\frac{\frac{81}{20}\pi \times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log\left(1-e^{-24\pi}\right)}{20\pi}}$$

Open code

- csch(x) is the hyperbolic cosecant function
- log(x) is the natural logarithm

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Exact result:

$$-\frac{9\pi^2 \operatorname{csch}^2(12\pi)}{\log\left(1-e^{-24\pi}\right)}$$

Decimal approximation:

- More digits

355.3057584392169102780416759955423995233601713487396490772...

Open code

355.305758…

And, we obtain from this result:

sqrt(18) ((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π)))))

Input:

$$\sqrt{18}\left(-\frac{\frac{81}{20}\pi \times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log\left(1-e^{-24\pi}\right)}{20\pi}}\right)$$

Open code

- csch(x) is the hyperbolic cosecant function
- log(x) is the natural logarithm

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Exact result:

$$-\frac{27\sqrt{2}\,\pi^2 \operatorname{csch}^2(12\pi)}{\log\left(1-e^{-24\pi}\right)}$$

Decimal approximation:

- More digits

1507.434667121997979378033162212595609838955328705871629340...

Open code

1507.43466 result that is in the range of hypothetical mass of gluino (1450-1600 GeV - ATLAS-CONF-2015-067 - 13th December 2015)

Series representations:

$$\frac{\sqrt{18}\left(\pi\, 81\times 3^2\operatorname{csch}^2(12\pi)\right)}{\frac{20\left(-\left(9\times 3^2\log\left(1-e^{-24\pi}\right)\right)\right)}{20\pi}}=\frac{3888\sqrt{2}\left(\sum_{k=-\infty}^{\infty}\frac{(-1)^k}{144+k^2}\right)^2}{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

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$$\frac{\sqrt{18}\left(\pi\, 81\times 3^2\operatorname{csch}^2(12\pi)\right)}{\frac{20\left(-\left(9\times 3^2\log\left(1-e^{-24\pi}\right)\right)\right)}{20\pi}}=\frac{3\left(1+288\sum_{k=1}^{\infty}\frac{(-1)^k}{144+k^2}\right)^2}{8\sqrt{2}\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

$$\frac{\sqrt{18}\left(\pi\, 81\times 3^2\operatorname{csch}^2(12\pi)\right)}{\frac{20\left(-\left(9\times 3^2\log\left(1-e^{-24\pi}\right)\right)\right)}{20\pi}}=\frac{108\sqrt{2}\,\pi^2\left(\sum_{k=1}^{\infty}q^{-1+2k}\right)^2}{\sum_{k=1}^{\infty}\frac{e^{(-24+2i)k\pi}}{k}}\quad \text{for } q=e^{12\pi}$$

Open code

And:

(27/(48+21))((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π)))))

Input:

$$\frac{27}{48+21}\left(-\frac{\frac{81}{20}\pi\times 3^2\operatorname{csch}^2(12\pi)}{\frac{9\times 3^2\log\left(1-e^{-24\pi}\right)}{20\pi}}\right)$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Exact result:

$$-\frac{81\pi^2\operatorname{csch}^2(12\pi)}{23\log\left(1-e^{-24\pi}\right)}$$

Decimal approximation:

- More digits

139.03268808491096489140761234608180850914093661472421050 84...

139.03268… result very near to the rest mass of Pion meson 139.57

Series representations:

- More

$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{\left(20\left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)\right)(48+21)}{20\pi}} = \frac{81\pi^2 \sum_{k=-\infty}^{\infty} \frac{1}{(12\pi - i k \pi)^2}}{23 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

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$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{\left(20\left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)\right)(48+21)}{20\pi}} = \frac{81\pi^2 \sum_{k=-\infty}^{\infty} \frac{1}{(12\pi + i k \pi)^2}}{23 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{\left(20\left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)\right)(48+21)}{20\pi}} = \frac{11\,664 \left(\sum_{k=-\infty}^{\infty} \frac{(-1)^k}{144+k^2}\right)^2}{23 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

(27/71))((((81/20 π 3^2 csch^2(12 π)))))/(((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π)))))

Input:

$$\frac{27}{71}\left(-\frac{\frac{81}{20}\pi \times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log\left(1-e^{-24\pi}\right)}{20\pi}}\right)$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Exact result:

$$-\frac{243\pi^2 \operatorname{csch}^2(12\pi)}{71 \log\left(1-e^{-24\pi}\right)}$$

Decimal approximation:

- More digits

135.1162743360402334860158486180231660159256989636052186631...

Open code

135.11627… result very near to the rest mass of Pion meson 134.9766

Series representations:

- More

$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{\left(20\left(-\left(9\times 3^2 \log\left(1-e^{-24\pi}\right)\right)\right)\right)71}{20\pi}} = \frac{34\,992 \left(\sum_{k=-\infty}^{\infty} \frac{(-1)^k}{144+k^2}\right)^2}{71 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

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$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{(20(-(9\times 3^2 \log(1-e^{-24\pi}))))\, 71}{20\pi}} = \frac{243\,\pi^2 \sum_{k=-\infty}^{\infty} \frac{1}{(12\pi - i k \pi)^2}}{71 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

Open code

$$\frac{(\pi\, 81 \times 3^2 \operatorname{csch}^2(12\pi))\, 27}{\frac{(20(-(9\times 3^2 \log(1-e^{-24\pi}))))\, 71}{20\pi}} = \frac{243\,\pi^2 \sum_{k=-\infty}^{\infty} \frac{1}{(12\pi + i k \pi)^2}}{71 \sum_{k=1}^{\infty} \frac{e^{(-24+2i)k\pi}}{k}}$$

(((((((81/20 π 3^2 csch^2(12 π))))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))))))^1/12

Input:

$$\sqrt[12]{-\frac{\frac{81}{20}\pi\times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}}}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Exact result:

$$\sqrt[12]{-\frac{1}{\log(1-e^{-24\pi})}}\ \sqrt[6]{3\pi \operatorname{csch}(12\pi)}$$

Decimal approximation:

- More digits

1.631361418871654443249629910977250436137605246576832681166...

Open code

1.6313614188…

1.0061571663^2(((((((81/20 π 3^2 csch^2(12 π))))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))))))^1/12

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$1.0061571663^2 \sqrt[12]{-\frac{\frac{81}{20}\pi\times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}}}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Result:

- More digits

1.6515123920...

1.6515123…. is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

1.0061571663^4(((((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))))))^1/12

Input interpretation:

$$1.0061571663^4 \sqrt[12]{-\frac{\frac{81}{20}\pi \times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}}}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Result:

- More digits

1.671912275...

1.671912275… result practically equal to the value of the formula:

$$m_{p'} = 2 \times \frac{\eta}{R} m_P = 1.6714213 \times 10^{-24} \text{ gm}$$

that is the holographic proton mass (N. Haramein)

1.0061571663^(21/5) (((((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))))))^1/12

Input interpretation:

$$1.0061571663^{21/5} \sqrt[12]{-\frac{\frac{81}{20}\pi \times 3^2 \operatorname{csch}^2(12\pi)}{\frac{9\times 3^2 \log(1-e^{-24\pi})}{20\pi}}}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Result:

- More digits

1.673966071...

1.673966071… result very near to the neutron mass

55+10^3*1.0061571663^(21/5) (((((((81/20 π 3^2 csch^2(12 π)))))/((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π)))))))))^1/12

Input interpretation:

$$55+10^3\times 1.0061571663^{21/5}\sqrt[12]{-\frac{\frac{81}{20}\pi\times 3^2\operatorname{csch}^2(12\pi)}{\frac{9\times 3^2\log\left(1-e^{-24\pi}\right)}{20\pi}}}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Result:

- More digits

1728.966071...

1728.966071… ≈ 1729 that is the Hardy-Ramanujan number

Note that:

exp^(27/12)((((((((-(9 *3^2 log(1 - e^(-24 π)))/(20 π))))) / ((((81/20 π 3^2 csch^2(12 π)))))))

Input:

$$\exp^{\frac{27}{12}}\left(\frac{-\frac{9\times 3^2\log\left(1-e^{-24\pi}\right)}{20\pi}}{\frac{81}{20}\pi\times 3^2\operatorname{csch}^2(12\pi)}\right)$$

Open code

- $\log(x)$ is the natural logarithm
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$\left(1-e^{-24\pi}\right)^{-\sinh^2(12\pi)/(4\pi^2)}$$

- $\sinh(x)$ is the hyperbolic sine function

Decimal approximation:

- More digits

1.006352667115606349083399165203038594377607312480561820367...

1.0063526...

result very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045 and practically equal to the result of Mock ϑ-function of 7th order -1.0061571663....

We have that:

$$(2^{2p}-1)\frac{B_{2p}\theta}{n^{2p+1}} = \int_0^\infty \frac{\pi x^{2p}\cosh \pi n x}{(1+x^2)\sinh^2 \pi n x}dx.$$

For p = 2, n = 4, x = 3, we obtain:

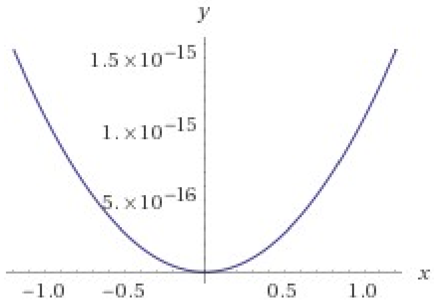
integrate [((Pi*3^4*cosh(12Pi))) / (((1+3^2)*sinh^2(12Pi)))]x

Indefinite integral:

- Approximate form
- Step-by-step solution

$$\int \frac{(\pi\, 3^4 \cosh(12\,\pi))\, x}{(1+3^2)\sinh^2(12\,\pi)}\, dx = \frac{81}{20}\,\pi\, x^2 \coth(12\,\pi)\operatorname{csch}(12\,\pi) + \text{constant}$$

Plot of the integral:



(x from −1.2 to 1.2)

For x = 3, we obtain:

81/20 π 3^2 coth(12 π) csch(12 π)

Input:

$$\frac{81}{20}\,\pi\times 3^2 \coth(12\,\pi)\operatorname{csch}(12\,\pi)$$

Open code

- coth(x) is the hyperbolic cotangent function
- csch(x) is the hyperbolic cosecant function

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Exact result:

$$\frac{729}{20}\,\pi \coth(12\,\pi)\operatorname{csch}(12\,\pi)$$

Decimal approximation:

- More digits

$9.713173692109361045584915596190560401595859511616 2199\ldots \times 10^{-15}$

Open code

$9.713173\ldots*10^{-15}$

We have, from the inverse of the result:

(((20 * 9.7131736921*10^-15))) / ((((π coth(12 π) csch(12 π))))

Input interpretation:

$$\frac{20 \times 9.7131736921 \times 10^{-15}}{\pi \coth(12\pi) \operatorname{csch}(12\pi)}$$

Open code

- $\coth(x)$ is the hyperbolic cotangent function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Result:

- More digits

729.00000000...

729

Thence:

10^3+(((20 * 9.7131736921*10^-15))) / ((((π coth(12 π) csch(12 π))))

Input interpretation:

$$10^3 + \frac{20 \times 9.7131736921 \times 10^{-15}}{\pi \coth(12\pi) \operatorname{csch}(12\pi)}$$

Open code

- $\coth(x)$ is the hyperbolic cotangent function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1729.0000000...

1729

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

We have also that:

2*(((20 * 9.7131736921*10^-15))) / ((((π coth(12 π) csch(12 π))))

Input interpretation:

$$2 \times \frac{20 \times 9.7131736921 \times 10^{-15}}{\pi \coth(12\pi) \operatorname{csch}(12\pi)}$$

Open code

- $\coth(x)$ is the hyperbolic cotangent function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits

1458.0000000...

1458 result that is in the range of the hypothetical gluino mass (1450-1600 GeV - ATLAS-CONF-2015-067 - 13th December 2015)

And:

1.0061571663((((10^3+(((20 * 9.7131736921*10^-15))) / ((((π coth(12 π) csch(12 π)))))))^1/15

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$1.0061571663 \sqrt[15]{10^3 + \frac{20 \times 9.7131736921 \times 10^{-15}}{\pi \coth(12 \pi) \operatorname{csch}(12 \pi)}}$$

Open code

- coth(x) is the hyperbolic cotangent function
- csch(x) is the hyperbolic cosecant function

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits

1.6539364725...

1.6539364725.... is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3$ = 1164,2696 i.e. 1,65578...

(13+5)+10^3*1.0061571663((((10^3+(((20 * 9.7131736921*10^-15))) / ((((π coth(12 π) csch(12 π)))))))^1/15

Input interpretation:

$$(13+5) + 10^3 \times 1.0061571663 \sqrt[15]{10^3 + \frac{20 \times 9.7131736921 \times 10^{-15}}{\pi \coth(12 \pi) \operatorname{csch}(12 \pi)}}$$

Open code

- coth(x) is the hyperbolic cotangent function
- csch(x) is the hyperbolic cosecant function

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits

1671.9364725...

1671.9364725... very near to the rest mass of Omega baryon 1672.45

From the above result, we have also that:

Input:

$$\sqrt[13]{\frac{81}{20}\pi\times 3^2 \coth(12\pi)\operatorname{csch}(12\pi)}$$

Open code

- $\coth(x)$ is the hyperbolic cotangent function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$\frac{3^{6/13}\sqrt[13]{\frac{1}{5}\pi\coth(12\pi)\operatorname{csch}(12\pi)}}{2^{2/13}}$$

Decimal approximation:

- More digits

0.083580449837111007718450226884005580296395488441031317663...

0.0835804...

((((((1+((((((((81/20 π 3^2 coth(12 π) csch(12 π))))^1/13)))))))^6

Input:

$$\left(1+\sqrt[13]{\frac{81}{20}\pi\times 3^2 \coth(12\pi)\operatorname{csch}(12\pi)}\right)^6$$

Open code

- $\coth(x)$ is the hyperbolic cotangent function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function

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Exact result:

$$\left(1+\frac{3^{6/13}\sqrt[13]{\frac{1}{5}\pi\coth(12\pi)\operatorname{csch}(12\pi)}}{2^{2/13}}\right)^6$$

Decimal approximation:

- More digits

1.6187022293718353369141655441129642963682648408747519673392...

1.618702229...

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Series representations:

- More

$$\left(1+\sqrt[13]{\frac{1}{20}\left(\pi\, 81\times 3^2\right)\coth(12\pi)\operatorname{csch}(12\pi)}\right)^6 = \frac{\left(10+3^{6/13}\times 10^{12/13}\sqrt[13]{\pi}\sqrt[13]{\left(1+2\sum_{k=1}^{\infty} q^{2k}\right)\sum_{k=1}^{\infty} q^{-1+2k}}\right)^6}{1000000} \text{ for } q=e^{12\pi}$$

Open code

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$$\left(1+\sqrt[13]{\frac{1}{20}\left(\pi\, 81\times 3^2\right)\coth(12\pi)\operatorname{csch}(12\pi)}\right)^6 = \frac{\left(5+3^{7/13}\times 5^{12/13}\pi^{2/13}\sqrt[13]{\left(-\sum_{k=-\infty}^{\infty}\frac{(-1)^k}{(144+k^2)\pi^2}\right)\left(1+2\sum_{k=1}^{\infty} q^{2k}\right)}\right)^6}{15625} \text{ for } q=e^{12\pi}$$

Open code

$$\left(1+\sqrt[13]{\frac{1}{20}\left(\pi\, 81\times 3^2\right)\coth(12\pi)\operatorname{csch}(12\pi)}\right)^6 = \frac{\left(10+2^{10/13}\times 3^{5/13}\times 5^{12/13}\sqrt[13]{-\left(1+288\pi^2\sum_{k=1}^{\infty}\frac{1}{(144+k^2)\pi^2}\right)\sum_{k=1}^{\infty} q^{-1+2k}}\right)^6}{1000000} \text{ for } q=e^{12\pi}$$

Open code

- More information

Integral representation:

$$(1+z)^a = \frac{\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{\Gamma(s)\,\Gamma(-a-s)}{z^s}\,ds}{(2\pi i)\,\Gamma(-a)} \text{ for } (0<\gamma<-\operatorname{Re}(a) \text{ and } |\arg(z)|<\pi)$$

Now, we have that:

$$\frac{B_{2p}\theta}{2pn^{2p}} = \int_0^\infty \frac{2x^{2p-1}}{(1+x^2)(e^{2\pi nx}-1)}dx$$

For p = 2, n = 4, x = 3, we obtain:

integrate [6^3/(((1+3^2)(e^(24Pi)-1)))]x

Indefinite integral:

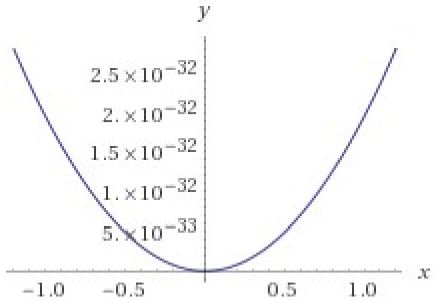
- Approximate form
- Step-by-step solution

$$\int \frac{6^3 x}{(1+3^2)(e^{24\pi}-1)}\,dx = \frac{54 x^2}{5(e^{24\pi}-1)} + \text{constant}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Plot of the integral:



(x from −1.2 to 1.2)

Open code

For x = 3, we obtain:

(54 3^2)/(5 (-1 + e^(24 π)))

Input:

$$\frac{54\times 3^2}{5(-1+e^{24\pi})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$\frac{486}{5(e^{24\pi}-1)}$$

Decimal approximation:

- More digits

$1.7483717183197111204456612116418958899498290333598731... \times 10^{-31}$

Open code

$1.748371718 * 10^{-31}$

Property:

$$\frac{486}{5\left(-1+e^{24\pi}\right)} \text{ is a transcendental number}$$

Series representations:

- More

$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+e^{96\sum_{k=0}^{\infty}(-1)^k/(1+2k)}\right)}$$

Open code

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$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+\left(\sum_{k=0}^{\infty}\frac{1}{k!}\right)^{24\pi}\right)}$$

Open code

$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+\left(\frac{1}{\sum_{k=0}^{\infty}\frac{(-1)^k}{k!}}\right)^{24\pi}\right)}$$

Open code

- $n!$ is the factorial function

Integral representations:

- More

$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+e^{96\int_0^1\sqrt{1-t^2}\,dt}\right)}$$

Open code

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$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+e^{48\int_0^{\infty}1/(1+t^2)\,dt}\right)}$$

Open code

$$\frac{54\times 3^2}{5\left(-1+e^{24\pi}\right)} = \frac{486}{5\left(-1+e^{48\int_0^1 1/\sqrt{1-t^2}\,dt}\right)}$$

Note that, from the result, we obtain:

8+1.7483717183197*10^-31 (((5 (-1 + e^(24 π))

Input interpretation:

$$8 + 1.7483717183197 \times 10^{-31} (5(-1 + e^{24\pi}))$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

494.00000000000...

494 that is very near to the rest mass of Kaon meson 493.677

And:

(54 3^2)/(5 (-1 + e^(24 π)))*10^34

Input:

$$\frac{54 \times 3^2}{5(-1 + e^{24\pi})} \times 10^{34}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$\frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{e^{24\pi} - 1}$$

Decimal approximation:

- More digits

1748.3717183197111204456612116418958899498290333598731707 14...

Open code

1748.3717183…. result in the range of the mass of candidate "glueball" $f_0(1710)$ ("glueball" =1760 ± 15 MeV).

Property:

$$\frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1 + e^{24\pi}}$$ is a transcendental number

Series representations:

- More

$$\frac{10^{34}(54 \times 3^2)}{5(-1 + e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1 + e^{96 \sum_{k=0}^{\infty} (-1)^k/(1+2k)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{10^{34}(54 \times 3^2)}{5(-1 + e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1 + \left(\sum_{k=0}^{\infty} \frac{1}{k!}\right)^{24\pi}}$$

Open code

$$\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1+\left(\frac{1}{\sum_{k=0}^{\infty}\frac{(-1)^k}{k!}}\right)^{24\pi}}$$

Open code

- $n!$ is the factorial function

Integral representations:

- More

$$\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1+e^{96\int_0^1\sqrt{1-t^2}\,dt}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1+e^{48\int_0^\infty 1/(1+t^2)\,dt}}$$

Open code

$$\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})} = \frac{972\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}{-1+e^{48\int_0^1 1/\sqrt{1-t^2}\,dt}}$$

1.0061571663(((((54 3^2)/(5 (-1 + e^(24 π)))*10^34))))^1/15

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$1.0061571663\sqrt[15]{\frac{54\times 3^2}{5(-1+e^{24\pi})}\times 10^{34}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6551654399...

1.6551654.... is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

Series representations:

- More

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+\left(\sum_{k=0}^{\infty}\frac{1}{k!}\right)^{96\sum_{k=0}^{\infty}(-1)^k/(1+2k)}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+\left(\sum_{k=0}^{\infty}\frac{1}{k!}\right)^{96\sum_{k=1}^{\infty}\tan^{-1}(1/F_{1+2k})}}}$$

Open code

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+\left(\sum_{k=0}^{\infty}\frac{(-1+k)^2}{k!}\right)^{96\sum_{k=0}^{\infty}(-1)^k/(1+2k)}}}$$

Open code

- $n!$ is the factorial function
- F_n is the n^{th} Fibonacci number
- $\tan^{-1}(x)$ is the inverse tangent function
- More information

Integral representations:

- More

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54\times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+e^{48\int_0^{\infty}1/(1+t^2)\,dt}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54 \times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+e^{96\int_0^1 \sqrt{1-t^2}\,dt}}}$$

Open code

$$1.00615716630000 \sqrt[15]{\frac{10^{34}(54 \times 3^2)}{5(-1+e^{24\pi})}} = 252.257202862469 \sqrt[15]{\frac{1}{-1+e^{48\int_0^\infty \sin(t)/t\,dt}}}$$

Open code

Now, we have that:

$$2^{2p-1}(2^{2p}-1)\frac{B_{2p}\theta}{2pn^{2p}} = \int_0^\infty \frac{x^{2p-1}}{2(1+x^2)\sinh\frac{1}{2}(\pi n x)}dx.$$

For p = 2, n = 4, x = 3, we obtain:

integrate [3^3/(((2*(1+3^2)sinh(1/2(12Pi)))]x

Indefinite integral:

- Approximate form
- Step-by-step solution

$$\int \frac{3^3}{\left(2(1+3^2)\sinh\left(\frac{12\pi}{2}\right)\right)x}\,dx = \frac{27}{20}\operatorname{csch}(6\pi)\log(x) + \text{constant}$$

(assuming a complex-valued logarithm)

Open code

- $\sinh(x)$ is the hyperbolic sine function
- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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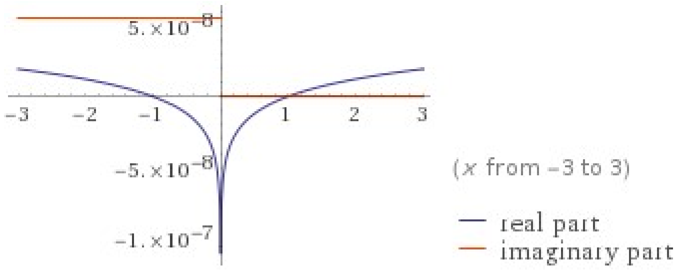
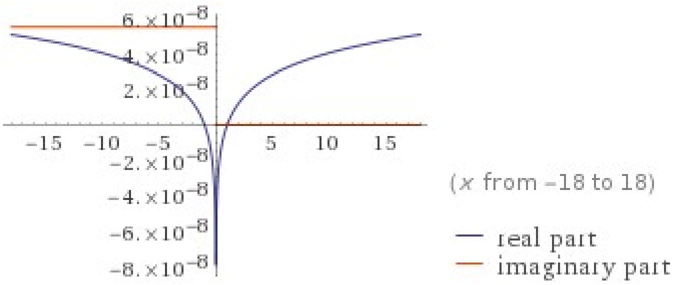
Plots of the integral:

- Complex-valued plots



Open code



For x = 3, we obtain:

27/20 csch(6 π) log(3)

Input:

$$\frac{27}{20}\operatorname{csch}(6\pi)\log(3)$$

Open code

- csch(x) is the hyperbolic cosecant function
- log(x) is the natural logarithm

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Decimal approximation:

- More digits

$1.9317463204235525250517181842458571374016850711567682... \times 10^{-8}$

Open code

1.93174632... * 10^{-8}

Series representations:

- More

$$\frac{1}{20}(\operatorname{csch}(6\pi)\log(3))\,27 = \frac{81\log(3)\sum_{k=-\infty}^{\infty}\frac{(-1)^k}{36+k^2}}{10\pi}$$

Open code

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$$\frac{1}{20}(\operatorname{csch}(6\pi)\log(3))\,27 = -\frac{27}{10}\log(3)\sum_{k=1}^{\infty}q^{-1+2k} \quad \text{for } q = e^{6\pi}$$

Open code

$$\frac{1}{20}(\operatorname{csch}(6\pi)\log(3))\,27 = \frac{9\log(3)}{40\pi} + \frac{81\log(3)\sum_{k=1}^{\infty}\frac{(-1)^k}{36+k^2}}{5\pi}$$

We have that:

2*10^3(((27/20 csch(6 π) log(3))))^1/56

Input interpretation:

$$2 \times 10^3 \sqrt[56]{\frac{27}{20} \operatorname{csch}(6\pi) \log(3)}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Result:

$$200 \times 2^{27/28} \times 3^{3/56} \times 5^{55/56} \sqrt[56]{\log(3) \operatorname{csch}(6\pi)}$$

Decimal approximation:

- More digits

1456.394749182231148938577883236824684288847557156001485993...

Open code

1456.3947 result that is in the range of the hypothetical gluino mass (1450-1600 GeV - ATLAS-CONF-2015-067 - 13th December 2015)

And:

10^3+10^3(((27/20 csch(6 π) log(3))))^1/56

Input:

$$10^3 + 10^3 \sqrt[56]{\frac{27}{20} \operatorname{csch}(6\pi) \log(3)}$$

Open code

- $\operatorname{csch}(x)$ is the hyperbolic cosecant function
- $\log(x)$ is the natural logarithm

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Exact result:

$$1000 + 100 \times 2^{27/28} \times 3^{3/56} \times 5^{55/56} \sqrt[56]{\log(3) \operatorname{csch}(6\pi)}$$

Decimal approximation:

- More digits

1728.197374591115574469288941618412342144423778578000742996...

Open code

1728.1973...

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

Series representations:

- More

$$10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi) \log(3))\, 27} =$$

$$1000 + 100 \times 3^{3/56} \times 10^{55/56} \sqrt[56]{\log(3)} \sqrt[56]{-\sum_{k=1}^{\infty} q^{-1+2k}} \text{ for } q = e^{6\pi}$$

Open code

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$$10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi) \log(3))\, 27} =$$

$$1000 + 100 \sqrt[14]{3}\; 10^{55/56} \sqrt[56]{\frac{\log(3)}{\pi}} \sqrt[56]{\sum_{k=-\infty}^{\infty} \frac{(-1)^k}{36 + k^2}}$$

Open code

$$10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi) \log(3))\, 27} =$$

$$1000 + 100 \times 2^{27/28} \times 3^{3/56} \times 5^{55/56} \sqrt[56]{\operatorname{csch}(6\pi)} \sqrt[56]{\log(2) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k}{k}}$$

1.0061571663((((((((10^3+10^3(((27/20 csch(6 π) log(3))))^1/56)))))))^1/15

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$1.0061571663 \sqrt[15]{10^3 + 10^3 \sqrt[56]{\frac{27}{20} \operatorname{csch}(6\pi) \log(3)}}$$

Open code

- csch(x) is the hyperbolic cosecant function
- log(x) is the natural logarithm

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Result:

- More digits

1.6538852761...

1.653885.... is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

Series representations:

- More

$$1.00615716630000 \sqrt[15]{10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi)\log(3))\, 27}} =$$

$$1.36772617423813 \sqrt[15]{10 + 3^{3/56} \times 10^{55/56} \sqrt[56]{-\log(3) \sum_{k=1}^{\infty} q^{-1+2k}}} \quad \text{for } q = e^{6\pi}$$

Open code

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$$1.00615716630000 \sqrt[15]{10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi)\log(3))\, 27}} =$$

$$1.36772617423813 \sqrt[15]{10 + \sqrt[14]{3}\; 10^{55/56} \sqrt[56]{\frac{\log(3) \sum_{k=-\infty}^{\infty} \frac{(-1)^k}{36+k^2}}{\pi}}}$$

Open code

$$1.00615716630000 \sqrt[15]{10^3 + 10^3 \sqrt[56]{\frac{1}{20} (\operatorname{csch}(6\pi)\log(3))\, 27}} =$$

$$1.36772617423813 \sqrt[15]{10 + 2^{27/28} \times 3^{3/56} \times 5^{55/56} \sqrt[56]{\operatorname{csch}(6\pi) \left(\log(2) - \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k}{k}\right)}}$$

We have the following five results:

2.31885 * 10^-33, 8.239007619 * 10^-31, 1.93174632 * 10^-8,

9.713173 * 10^-15, 1.748371718 * 10^-31

We obtain:

10/1.0061571663^2((((((2.31885 * 10^-33) + (8.239007619 * 10^-31) + (1.93174632 * 10^-8) + (9.713173 * 10^-15) + (1.748371718 * 10^-31))))))^1/10

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$\frac{10}{1.0061571663^2} \sqrt[10]{\frac{2.31885}{10^{33}} + \frac{8.239007619}{10^{31}} + \frac{1.93174632}{10^8} + \frac{9.713173}{10^{15}} + \frac{1.748371718}{10^{31}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.672104369...

1.672104369.... result very near to the proton mass

13+2+10^4 * 1.0061571663^2((((((2.31885 * 10^-33) + (8.239007619 * 10^-31) + (1.93174632 * 10^-8) + (9.713173 * 10^-15) + (1.748371718 * 10^-31))))))^1/10

Input interpretation:

$$13 + 2 + 10^4 \times 1.0061571663^2 \sqrt[10]{\frac{2.31885}{10^{33}} + \frac{8.239007619}{10^{31}} + \frac{1.93174632}{10^8} + \frac{9.713173}{10^{15}} + \frac{1.748371718}{10^{31}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1728.667975...

1728.667975...

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

10^6*((((((((((2.31885 * 10^-33) + (8.239007619 * 10^-31) + (1.93174632 * 10^-8) + (9.713173 * 10^-15) +(1.748371718 * 10^-31))))^6))))^1/8

Input interpretation:

$$10^6 \sqrt[8]{\left(\frac{2.31885}{10^{33}} + \frac{8.239007619}{10^{31}} + \frac{1.93174632}{10^8} + \frac{9.713173}{10^{15}} + \frac{1.748371718}{10^{31}}\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:
- More digits

1.63856145...

$1.63856145.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

2sqrt[6*10^6*(((((((((((2.31885 * 10^-33) + (8.239007619 * 10^-31) + (1.93174632 * 10^-8) + (9.713173 * 10^-15) +(1.748371718 * 10^-31))))^6))))^1/8]

Input interpretation:

$$2\sqrt{\left(6\times 10^6 \sqrt[8]{\left(\frac{2.31885}{10^{33}}+\frac{8.239007619}{10^{31}}+\frac{1.93174632}{10^8}+\frac{9.713173}{10^{15}}+\frac{1.748371718}{10^{31}}\right)^6}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:
- More digits

6.27100270...

$6.2710027.... \approx 2\pi$

(((2.31885 * 10^-33 * 8.239007619 * 10^-31 * 1.93174632 * 10^-8 * 9.713173 * 10^-15 * 1.748371718 * 10^-31)))

Input interpretation:

$$\frac{2.31885\times 8.239007619\times 1.93174632\times 9.713173\times 1.748371718}{10^{33}\times 10^{31}\times 10^{8}\times 10^{15}\times 10^{31}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$6.26747414272243289211183597261227413512\times 10^{-116}$

$6.267474... * 10^{-116}$

1/6((((1/2(((2.31885 * 10^-33 * 8.239007619 * 10^-31 * 1.93174632 * 10^-8 * 9.713173 * 10^-15 * 1.748371718 * 10^-31))))))^2

Input interpretation:

$$\frac{1}{6}\left(\frac{1}{2}\times\frac{2.31885\times 8.239007619\times 1.93174632\times 9.713173\times 1.748371718}{10^{33}\times 10^{31}\times 10^{8}\times 10^{15}\times 10^{31}}\right)^2$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  $1.636718005403928962741846864357948679234182142296383... \times 10^{-232}$

  $1.636718... * 10^{-232}$

From which:

1.0061571663^2*10^232 * 1/6((((1/2(((2.31885 * 10^-33 * 8.239007619 * 10^-31 * 1.93174632 * 10^-8 * 9.713173 * 10^-15 * 1.748371718 * 10^-31))))))^2

Input interpretation:

$$1.0061571663^2 \times 10^{232} \times \frac{1}{6}\left(\frac{1}{2} \times \frac{2.31885 \times 8.239007619 \times 1.93174632 \times 9.713173 \times 1.748371718}{10^{33} \times 10^{31} \times 10^{8} \times 10^{15} \times 10^{31}}\right)^2$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.656935144415006563281731440128363761322890452164665563475...

1.6569351444.... is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164,2696$ i.e. 1,65578...

colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))

Input interpretation:

$$-\log\left(\frac{2.31885}{10^{33}} \times \frac{8.239007619}{10^{31}} \times \frac{1.93174632}{10^{8}} \times \frac{9.713173}{10^{15}} \times \frac{1.748371718}{10^{31}}\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  265.26450...

265.2645...

(((((colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31)))))))^1/11

Input interpretation:

$$\sqrt[11]{-\log\left(\frac{2.31885}{10^{33}} \times \frac{8.239007619}{10^{31}} \times \frac{1.93174632}{10^{8}} \times \frac{9.713173}{10^{15}} \times \frac{1.748371718}{10^{31}}\right)}$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.66086551...

1.66086551... is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

-21*2+4colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))

Input interpretation:

$$-21\times 2+4\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1019.0580...

1019.058... result very near to the rest mass of Phi meson 1019.445

Series representations:

$$-21\times 2+4(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-42-8\,i\,\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\,\pi}\right\rfloor-4\log(x)+4\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$-21\times 2+4(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$
$$-42-4\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-4\log(z_0)-$$
$$4\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log(z_0)+4\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$-21\times 2+4(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$
$$-42-8\,i\,\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor-$$
$$4\log(z_0)+4\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$-21\times 2+4(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$
$$-42-4\int_1^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

3-21-144+5colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))

Input interpretation:

$$3-21-144+5\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1164.3225...

1164.3225...

Series representations:

$$3-21-144+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)= -162-10\,i\,\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\,\pi}\right\rfloor-5\log(x)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$3-21-144+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)= -162-5\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-5\log(z_0)-5\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$3-21-144+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)= -162-10\,i\,\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\,\pi}\right\rfloor-5\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$3-21-144+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-162-5\int_1^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

[3-21-144+5colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))]^1/14

Input interpretation:

$$\left(3-21-144+5\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)\right)\hat{}\,(1/14)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.65578992...

1.65578992... is equal to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3$ = 1164,2696 i.e. 1,65578...

27-(27*6)+5colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15)

Input interpretation:

$$27-27\times 6+5\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1191.3225...

1191.3225... result very near to the rest mass of Sigma baryon 1192.642

Series representations:

$$27-27\times 6+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}(10^{15}\times 10^{31})}\right)=$$
$$-135-10\,i\,\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\,\pi}\right\rfloor-5\log(x)+5\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times 10^{-116}-x)^k x^{-k}}{k}\quad\text{for } x<0$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$27-27\times 6+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}(10^{15}\times 10^{31})}\right)=$$
$$-135-5\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-5\log(z_0)-5\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times 10^{-116}-z_0)^k z_0^{-k}}{k}$$

Open code

$$27-27\times 6+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}(10^{15}\times 10^{31})}\right)=$$
$$-135-10\,i\,\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\,\pi}\right\rfloor-5\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times 10^{-116}-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$27-27\times 6+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}(10^{15}\times 10^{31})}\right)=$$
$$-135-5\int_1^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

-5+5colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))

Input interpretation:

$$-5+5\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1321.3225...

1321.3225... result very near to the rest mass of Xi baryon 1321.71

Series representations:

$$-5+5(-1)\log\left(\frac{8.23901\times2.31885\times1.93175\,(9.71317\times1.74837)}{10^{31}\times10^{33}\times10^{8}\,(10^{15}\times10^{31})}\right)=$$
$$-5-10\,i\,\pi\left\lfloor\frac{\arg(6.26747\times10^{-116}-x)}{2\,\pi}\right\rfloor-5\log(x)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times10^{-116}-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

Open code

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$$-5+5(-1)\log\left(\frac{8.23901\times2.31885\times1.93175\,(9.71317\times1.74837)}{10^{31}\times10^{33}\times10^{8}\,(10^{15}\times10^{31})}\right)=$$
$$-5-5\left\lfloor\frac{\arg(6.26747\times10^{-116}-z_0)}{2\,\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-5\log(z_0)-5\left\lfloor\frac{\arg(6.26747\times10^{-116}-z_0)}{2\,\pi}\right\rfloor\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$-5+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right) =$$

$$-5-10\,i\,\pi\left\lfloor -\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor -$$

$$5\log(z_0)+5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$-5+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right) =$$

$$-5-5\int_1^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

144+5colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))

Input interpretation:

$$144+5\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

1470.3225...

1470.3225 result that is in the range of hypothetical gluino mass (1450-1600 GeV - ATLAS-CONF-2015-067 - 13th December 2015)

Series representations:

$$144+5(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right) =$$

$$144-10\,i\,\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\pi}\right\rfloor -5\log(x)+$$

$$5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad \text{for } x<0$$

Open code

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$$144 + 5(-1)\log\left(\frac{8.23901 \times 2.31885 \times 1.93175\,(9.71317 \times 1.74837)}{10^{31} \times 10^{33} \times 10^{8}\,(10^{15} \times 10^{31})}\right) =$$
$$144 - 5\left\lfloor\frac{\arg(6.26747\times10^{-116} - z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right) - 5\log(z_0) - 5\left\lfloor\frac{\arg(6.26747\times10^{-116} - z_0)}{2\pi}\right\rfloor \log(z_0) + 5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times10^{-116} - z_0)^k\, z_0^{-k}}{k}$$

Open code

$$144 + 5(-1)\log\left(\frac{8.23901 \times 2.31885 \times 1.93175\,(9.71317 \times 1.74837)}{10^{31} \times 10^{33} \times 10^{8}\,(10^{15} \times 10^{31})}\right) =$$
$$144 - 10\,i\,\pi\left\lfloor-\frac{-\pi + \arg\left(\frac{6.26747\times10^{-116}}{z_0}\right) + \arg(z_0)}{2\pi}\right\rfloor - 5\log(z_0) + 5\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times10^{-116} - z_0)^k\, z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$144 + 5(-1)\log\left(\frac{8.23901 \times 2.31885 \times 1.93175\,(9.71317 \times 1.74837)}{10^{31} \times 10^{33} \times 10^{8}\,(10^{15} \times 10^{31})}\right) =$$
$$144 - 5\int_{1}^{6.26747\times10^{-116}} \frac{1}{t}\,dt$$

1/2 ((((13+colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))))))

Input interpretation:

$$\frac{1}{2}\left(13 - \log\left(\frac{2.31885}{10^{33}} \times \frac{8.239007619}{10^{31}} \times \frac{1.93174632}{10^{8}} \times \frac{9.713173}{10^{15}} \times \frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

139.13225...

139.13225... result very near to the rest mass of Pion meson 139.57

Series representations:

$$\frac{1}{2}\left(13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=\frac{13}{2}-i\left(\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\pi}\right\rfloor\right)-\frac{\log(x)}{2}+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad \text{for } x<0$$

Open code

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$$\frac{1}{2}\left(13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=\frac{13}{2}-\frac{1}{2}\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-\frac{\log(z_0)}{2}-\frac{1}{2}\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log(z_0)+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$\frac{1}{2}\left(13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=\frac{13}{2}-i\left(\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor\right)-\frac{\log(z_0)}{2}+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$\frac{1}{2}\left(13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=$$

$$\frac{13}{2}-\frac{1}{2}\int_{1}^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

((((-13+3colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))))))

Input interpretation:

$$-13+3\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

782.79349...

782.79349... result very near to the rest mass of Omega meson 782.65

Series representations:

$$-13+3(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-13-6\,i\,\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\,\pi}\right\rfloor-3\log(x)+$$

$$3\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

Open code

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$$-13+3(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-13-3\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-3\log(z_0)-$$

$$3\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\,\pi}\right\rfloor\log(z_0)+3\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$-13+3(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-13-6\,i\,\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times10^{-116}}{z_0}\right)+\arg(z_0)}{2\,\pi}\right\rfloor-$$

$$3\log(z_0)+3\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$-13+3(-1)\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)=$$

$$-13-3\int_1^{6.26747\times10^{-116}}\frac{1}{t}\,dt$$

1/2((((-13+colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))))))

Input interpretation:

$$\frac{1}{2}\left(-13-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

126.13225...

126.13225...

This result very near to the Higgs boson mass 126.2 ±0.6 ±0.2 10 CHATRCHYAN13J CMS pp, 7, 8 TeV, Z Z∗ → 4ℓ

Series representations:

$$\frac{1}{2}\left(-13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=-\frac{13}{2}-i\left(\pi\left\lfloor\frac{\arg(6.26747\times 10^{-116}-x)}{2\pi}\right\rfloor\right)-\frac{\log(x)}{2}+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-x)^k\,x^{-k}}{k}\quad \text{for } x<0$$

Open code

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$$\frac{1}{2}\left(-13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=-\frac{13}{2}-\frac{1}{2}\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-\frac{\log(z_0)}{2}-\frac{1}{2}\left\lfloor\frac{\arg(6.26747\times 10^{-116}-z_0)}{2\pi}\right\rfloor\log(z_0)+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

$$\frac{1}{2}\left(-13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=-\frac{13}{2}-i\left(\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times 10^{-116}}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor\right)-\frac{\log(z_0)}{2}+\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k\,(6.26747\times 10^{-116}-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$\frac{1}{2}\left(-13-\log\left(\frac{8.23901\times 2.31885\times 1.93175\,(9.71317\times 1.74837)}{10^{31}\times 10^{33}\times 10^{8}\,(10^{15}\times 10^{31})}\right)\right)=-\frac{13}{2}-\frac{1}{2}\int_{1}^{6.26747\times 10^{-116}}\frac{1}{t}\,dt$$

From equation:

$$\int_{\mathcal{M}_g} c_{g-1}^3 = C_{g,h\to 0} = (-1)^{g-1}\chi_g \frac{\zeta(2g-2)}{(2\pi)^{2g-2}}$$

from the (2.3), we obtain:

1/2 * ((((1/42) / ((2*6(2*6-2)))) * (((((1/30) / (2*4-2)!))))

Input:

$$\frac{1}{2}\left(\frac{\frac{1}{42}}{2\times 6\,(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}\right)$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{1}{217\,728\,000}$$

Decimal approximation:

- More digits

$4.5928865373309817754262198706643151087595532039976484\ldots \times 10^{-9}$

Open code

Series representation:

$$\frac{1}{((42\,(2\times 6\,(2\times 6-2)))\,(30\,(2\times 4-2)!))\,2} = \frac{1}{302\,400\sum_{k=0}^{\infty}\frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}$$

for $((n_0 \notin \mathbb{Z} \text{ or } n_0 \geq 0) \text{ and } n_0 \to 6)$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{1}{((42\,(2\times 6\,(2\times 6-2)))\,(30\,(2\times 4-2)!))\,2} = \frac{1}{302\,400\int_0^{\infty} e^{-t}\,t^6\,dt}$$

Open code

$$\frac{1}{((42\,(2\times 6\,(2\times 6-2)))\,(30\,(2\times 4-2)!))\,2} = \frac{1}{302\,400\int_0^{1}\log^6\left(\frac{1}{t}\right)dt}$$

Open code

$$\frac{1}{((42(2\times 6(2\times 6-2)))(30(2\times 4-2)!))\,2} = \frac{1}{302400\left(\int_1^\infty e^{-t}\,t^6\,dt + \sum_{k=0}^\infty \frac{(-1)^k}{(7+k)k!}\right)}$$

Open code

- $\log(x)$ is the natural logarithm
-

And:

10^2*1/6(((((((2((((((1/2 * ((((1/42) / ((2*6(2*6-2))) * (((((1/30) / (2*4-2)!)))))))))))))))^1/8

Input:

$$10^2\times\frac{1}{6}\sqrt[8]{2\left(\frac{1}{2}\left(\frac{\frac{1}{42}}{2\times 6(2\times 6-2)}\times\frac{\frac{1}{30}}{(2\times 4-2)!}\right)\right)}$$

Open code

- $n!$ is the factorial function

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Exact result:

$$\frac{5\times 5^{5/8}}{3\times 3^{5/8}\sqrt[8]{14}}$$

Decimal approximation:

- More digits

1.649066668505419112148388344170721876332826610590832166921...

Open code

$1.649066... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934\ ...$

Series representation:

$$\frac{1}{6}\times 10^2\sqrt[8]{\frac{2}{2((42(2\times 6(2\times 6-2)))(30(2\times 4-2)!))}} = \frac{5\left(\frac{2}{3}\right)^{3/8}5^{3/4}\sqrt[8]{\frac{1}{\sum_{k=0}^\infty \frac{(6-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}}}}{3\sqrt[8]{7}} \text{ for } ((n_0\notin\mathbb{Z} \text{ or } n_0\geq 0) \text{ and } n_0\to 6)$$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{1}{6}\times 10^2 \sqrt[8]{\frac{2}{2((42(2\times 6(2\times 6-2)))(30(2\times 4-2)!))}} = \frac{5\left(\frac{2}{3}\right)^{3/8} 5^{3/4} \sqrt[8]{\frac{1}{\int_0^1 \log^6\left(\frac{1}{t}\right)dt}}}{3\sqrt[8]{7}}$$

Open code

$$\frac{1}{6}\times 10^2 \sqrt[8]{\frac{2}{2((42(2\times 6(2\times 6-2)))(30(2\times 4-2)!))}} = \frac{5\left(\frac{2}{3}\right)^{3/8} 5^{3/4} \sqrt[8]{\frac{1}{\int_0^\infty e^{-t}\, t^6\, dt}}}{3\sqrt[8]{7}}$$

Open code

$$\frac{1}{6}\times 10^2 \sqrt[8]{\frac{2}{2((42(2\times 6(2\times 6-2)))(30(2\times 4-2)!))}} = \frac{5\left(\frac{2}{3}\right)^{3/8} 5^{3/4} \sqrt[8]{\frac{1}{\int_1^\infty e^{-t}\, t^6\, dt+\sum_{k=0}^\infty \frac{(-1)^k}{(7+k)\,k!}}}}{3\sqrt[8]{7}}$$

Practically (see pag. 5) the same result of eq. (2.3)!

We note that, from the results of Ramanujan integrals, we obtain also a value very near to the hypothetical mass of Gluino (lower limit - *Phys. Rev. Lett. 120 (2018) 241801*):

((((-21-89+8colog(((2.31885 * 10^-33) * (8.239007619 * 10^-31) * (1.93174632 * 10^-8) * (9.713173 * 10^-15) * (1.748371718 * 10^-31))))))))

Input interpretation:

$$-21-89+8\left(-\log\left(\frac{2.31885}{10^{33}}\times\frac{8.239007619}{10^{31}}\times\frac{1.93174632}{10^{8}}\times\frac{9.713173}{10^{15}}\times\frac{1.748371718}{10^{31}}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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$$-21-89+8(-1)\log\left(\frac{8.23901\times2.31885\times1.93175(9.71317\times1.74837)}{10^{31}\times10^{33}\times10^{8}(10^{15}\times10^{31})}\right)=$$
$$-110-16i\pi\left\lfloor\frac{\arg(6.26747\times10^{-116}-x)}{2\pi}\right\rfloor-8\log(x)+8\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times10^{-116}-x)^k x^{-k}}{k}\quad\text{for } x<0$$

Result:

- More digits

2012.1160...

2012.116...

Series representations:

Open code

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$$-21-89+8(-1)\log\left(\frac{8.23901\times2.31885\times1.93175(9.71317\times1.74837)}{10^{31}\times10^{33}\times10^{8}(10^{15}\times10^{31})}\right)=$$
$$-110-8\left\lfloor\frac{\arg(6.26747\times10^{-116}-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-8\log(z_0)-8\left\lfloor\frac{\arg(6.26747\times10^{-116}-z_0)}{2\pi}\right\rfloor\log(z_0)+8\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times10^{-116}-z_0)^k z_0^{-k}}{k}$$

Open code

$$-21-89+8(-1)\log\left(\frac{8.23901\times2.31885\times1.93175(9.71317\times1.74837)}{10^{31}\times10^{33}\times10^{8}(10^{15}\times10^{31})}\right)=$$
$$-110-16i\pi\left\lfloor-\frac{-\pi+\arg\left(\frac{6.26747\times10^{-116}}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor-8\log(z_0)+8\sum_{k=1}^{\infty}\frac{(-1)^k(6.26747\times10^{-116}-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$-21 - 89 + 8(-1)\log\left(\frac{8.23901 \times 2.31885 \times 1.93175 (9.71317 \times 1.74837)}{10^{31} \times 10^{33} \times 10^{8} (10^{15} \times 10^{31})}\right) = -110 - 8 \int_1^{6.26747\times 10^{-116}} \frac{1}{t}\, dt$$

Open code

From:

The Mathematica® Journal
***A General Method for Constructing Ramanujan-Type Formulas for Powers of* 1/ π**
N. D. Bagis
The Mathematica Journal ***15*** *© 2013 Wolfram Media, Inc.*

Now, we have that:

Series for $1/\pi^4$

$$\sum_{n=0}^{\infty} c_4(n)\left(-56+40\sqrt{2}\right)^n \Big[1 + 5\left(\frac{292\,072 + 56\,267\sqrt{2}}{462\,719}\right) n + 6\left(\frac{268\,641 + 81\,580\sqrt{2}}{462\,719}\right) n^2 + 4\left(\frac{134\,444 + 32\,155\sqrt{2}}{462\,719}\right) n^3 - 4\left(\frac{36\,209 + 34\,800\sqrt{2}}{462\,719}\right) n^4 \Big] = \frac{105}{\left(229\,441 - 162\,240\sqrt{2}\right)\pi^4}. \quad (15)$$

((-105/((((229441-162240*sqrt(2))*Pi^4))

Input:

$$-\frac{105}{(229441 - 162240\sqrt{2})\pi^4}$$

Open code

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Decimal approximation:

- More digits

1.068991993376880994665457948160691965440803361789246915491...

Open code

1.06899199...

Property:

$$-\frac{105}{(229441 - 162240\sqrt{2})\pi^4}$$ is a transcendental number

Open code

Series representations:

$$-\frac{105}{(229441 - 162240\sqrt{2})\pi^4} = \frac{105}{\pi^4\left(-229441 + 162240\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)}$$

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

Open code

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$$-\frac{105}{(229441 - 162240\sqrt{2})\pi^4} = \frac{105}{\pi^4\left(-229441 + 162240\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

for $(x \in \mathbb{R}$ and $x < 0)$

Open code

$$-\frac{105}{(229441 - 162240\sqrt{2})\pi^4} = 105\Bigg/\left(\pi^4\left(-229441 + 162240\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2(1+\lfloor\arg(2-z_0)/(2\pi)\rfloor)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\right)$$

Open code

(-55+5)+10^3((-105/((((229441-162240*sqrt(2))*Pi^4))

Input:

$$(-55+5)+10^3\left(-\frac{105}{\left(229\,441-162\,240\sqrt{2}\right)\pi^4}\right)$$

Open code

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Result:

$$-50-\frac{105\,000}{\left(229\,441-162\,240\sqrt{2}\right)\pi^4}$$

Decimal approximation:

- More digits

1018.991993376880994665457948160691965440803361789246915491...

Open code

1018.991993… result very near to the rest mass of Phi meson 1019.445

Property:

$$-50-\frac{105\,000}{\left(229\,441-162\,240\sqrt{2}\right)\pi^4}$$ is a transcendental number

Series representations:

$$(-55+5)+\frac{10^3(-105)}{\left(229\,441-162\,240\sqrt{2}\right)\pi^4}= -50+\frac{105\,000}{\pi^4\left(-229\,441+162\,240\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)}$$

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

Open code

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$$(-55+5)+\frac{10^3(-105)}{\left(229\,441-162\,240\sqrt{2}\right)\pi^4}= -50+\frac{105\,000}{\pi^4\left(-229\,441+162\,240\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

for $(x\in\mathbb{R}$ and $x<0)$

Open code

$$(-55+5)+\frac{10^3(-105)}{(229441-162240\sqrt{2})\pi^4} =$$

$$-50-105000\Big/\left(\pi^4\left(229441-162240\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2(1+\lfloor\arg(2-z_0)/(2\pi)\rfloor)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\right)$$

(((((((10^3*-105/((((229441-162240*sqrt(2))*Pi^4)))))))))^1/14

Input:

$$\sqrt[14]{10^3\left(-\frac{105}{(229441-162240\sqrt{2})\pi^4}\right)}$$

Open code

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Exact result:

$$2^{3/14}\sqrt[14]{\frac{21}{162240\sqrt{2}-229441}}\left(\frac{5}{\pi}\right)^{2/7}$$

Decimal approximation:

- More digits

1.645717616431516330682203572954586192880461219697946735027...

Open code

$1.645717616... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934...$

Property:

$$2^{3/14}\sqrt[14]{\frac{21}{-229441+162240\sqrt{2}}}\left(\frac{5}{\pi}\right)^{2/7}$$ is a transcendental number

Series representations:

$$\sqrt[14]{\frac{10^3(-105)}{(229441-162240\sqrt{2})\pi^4}} =$$

$$2^{3/14}\times 5^{2/7}\sqrt[14]{21}\sqrt[14]{\frac{1}{\pi^4\left(-229441+162240\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)}}$$

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

Open code

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$$\sqrt[14]{\frac{10^3(-105)}{(229\,441-162\,240\sqrt{2})\pi^4}} = 2^{3/14} \times 5^{2/7}\sqrt[14]{21}\sqrt[14]{\frac{1}{\pi^4\left(-229\,441+162\,240\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)}}$$

for ($x \in \mathbb{R}$ and $x < 0$)

Open code

$$\sqrt[14]{\frac{10^3(-105)}{(229\,441-162\,240\sqrt{2})\pi^4}} =$$

$$2^{3/14} \times 5^{2/7}\sqrt[14]{21}\left(-\left(1\Big/\left(\pi^4\left(229\,441-162\,240\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\right)\right)\right)\hat{}\,(1/14)$$

Integral representation:

$$(1+z)^a = \frac{\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\Gamma(s)\Gamma(-a-s)}{z^s}\,ds}{(2\pi i)\Gamma(-a)}$$ for ($0 < \gamma < -\mathrm{Re}(a)$ and $|\arg(z)| < \pi$)

Series for $1/\pi^6$

$$\sum_{n=0}^{\infty} c_6(n)\left(-56+40\sqrt{2}\right)^n\left[1+\frac{28\,335\,508\,172-240\,070\,543\sqrt{2}}{12\,623\,771\,801}n+\frac{22\,911\,684\,702-3\,047\,538\,900\sqrt{2}}{12\,623\,771\,801}n^2+\frac{6\,110\,502\,200-5\,456\,734\,120\sqrt{2}}{12\,623\,771\,801}n^3-\frac{1\,196\,112\,280+3\,649\,618\,320\sqrt{2}}{12\,623\,771\,801}n^4-\frac{505\,494\,672+788\,011\,092\sqrt{2}}{12\,623\,771\,801}n^5+\frac{463\,408\,744+244\,639\,040\sqrt{2}}{12\,623\,771\,801}n^6\right] = \frac{3465}{(629\,823\,301-445\,352\,320\sqrt{2})\pi^6}. \quad (17)$$

((3465/((((629823301-445352320*sqrt(2))*Pi^6))

Input:

$$\frac{3465}{\left(629\,823\,301 - 445\,352\,320\sqrt{2}\right)\pi^6}$$

Open code

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Decimal approximation:

- More digits

0.35963635187244622445375046261911465905290945715389455994 1...

Open code

0.35963635…

Property:

$$\frac{3465}{\left(629\,823\,301 - 445\,352\,320\sqrt{2}\right)\pi^6} \text{ is a transcendental number}$$

Series representations:

$$\frac{3465}{\left(629\,823\,301 - 445\,352\,320\sqrt{2}\right)\pi^6} = \frac{3465}{\pi^6\left(629\,823\,301 - 445\,352\,320\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k (2-z_0)^k z_0^{-k}}{k!}\right)}$$

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

Open code

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$$\frac{3465}{\left(629\,823\,301 - 445\,352\,320\sqrt{2}\right)\pi^6} = \frac{3465}{\pi^6\left(629\,823\,301 - 445\,352\,320\exp\left(i\,\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k (2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

for $(x \in \mathbb{R} \text{ and } x < 0)$

Open code

$$\frac{3465}{\left(629\,823\,301 - 445\,352\,320\sqrt{2}\right)\pi^6} = 3465 \Bigg/ \left(\pi^6\left(629\,823\,301 - 445\,352\,320\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2(1+\lfloor\arg(2-z_0)/(2\pi)\rfloor)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k (2-z_0)^k z_0^{-k}}{k!}\right)\right)$$

sqrt((1/ ((3465/((((629823301-445352320*sqrt(2))*Pi^6))

Input:

$$\sqrt{\frac{1}{\frac{3465}{\left(629823301-445352320\sqrt{2}\right)\pi^6}}}$$

Open code

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Exact result:

$$\frac{1}{3}\sqrt{\frac{1}{385}\left(629823301-445352320\sqrt{2}\right)}\ \pi^3$$

Decimal approximation:

- More digits

1.667509083008302775794745770385301544724388941435692392806...

Open code

1.667509… is near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164{,}2696$ i.e. 1,65578...

Property:

$$\frac{1}{3}\sqrt{\frac{1}{385}\left(629823301-445352320\sqrt{2}\right)}\ \pi^3 \text{ is a transcendental number}$$

Series representations:

- More

$$\sqrt{\frac{1}{\frac{3465}{\left(629823301-445352320\sqrt{2}\right)\pi^6}}}=\sqrt{-1+\frac{\pi^6\left(629823301-445352320\sqrt{2}\right)}{3465}}\sum_{k=0}^{\infty}\binom{\frac{1}{2}}{k}\left(-1+\frac{\pi^6\left(629823301-445352320\sqrt{2}\right)}{3465}\right)^{-k}$$

Open code

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$$\sqrt{\frac{1}{\frac{3465}{\left(629823301-445352320\sqrt{2}\right)\pi^6}}}=\sqrt{-1+\frac{\pi^6\left(629823301-445352320\sqrt{2}\right)}{3465}}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(-1+\frac{\pi^6\left(629823301-445352320\sqrt{2}\right)}{3465}\right)^{-k}}{k!}$$

Open code

$$\sqrt{\frac{1}{\frac{3465}{(629823301-445352320\sqrt{2})\pi^6}}} = \sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(\frac{\pi^6(629823301-445352320\sqrt{2})}{3465}-z_0\right)^k z_0^{-k}}{k!}$$

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

(-13-2)+10^3((1/ ((3465/((((629823301-445352320*sqrt(2))*Pi^6))

Input:

$$(-13-2)+10^3 \times \frac{1}{\frac{3465}{(629823301-445352320\sqrt{2})\pi^6}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\frac{200}{693}\left(629823301-445352320\sqrt{2}\right)\pi^6-15$$

Decimal approximation:

- More digits

2765.586541915190797103771167672543287302741066548868773419...

Open code

2765.586… result very near to the rest mass of charmed Omega baryon 2765.9

Property:

$$-15+\frac{200}{693}\left(629823301-445352320\sqrt{2}\right)\pi^6 \text{ is a transcendental number}$$

Series representations:

$$(-13-2)+\frac{10^3}{\frac{3465}{(629823301-445352320\sqrt{2})\pi^6}} = -15+\frac{125964660200\,\pi^6}{693}-\frac{12724352000}{99}\pi^6\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}$$

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

Open code

Enlarge Data Customize A Plaintext Interactive

$$(-13-2)+\frac{10^3}{\frac{3465}{\left(629823301-445352320\sqrt{2}\right)\pi^6}} =$$

$$-15+\frac{125964660200\,\pi^6}{693}-\frac{12724352000}{99}\,\pi^6 \exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k (2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!} \quad \text{for } (x \in \mathbb{R} \text{ and } x < 0)$$

Open code

$$(-13-2)+\frac{10^3}{\frac{3465}{\left(629823301-445352320\sqrt{2}\right)\pi^6}} =$$

$$-15+\frac{125964660200\,\pi^6}{693}-\frac{12724352000}{99}\,\pi^6 \left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2(1+\lfloor\arg(2-z_0)/(2\pi)\rfloor)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k (2-z_0)^k z_0^{-k}}{k!}$$

$$\sum_{n=0}^{\infty}\frac{c_6(n)}{64^n}\left[1+\frac{913150}{307323}n-\frac{75313}{102441}n^2-\frac{4998980}{307323}n^3-\frac{1126755}{34147}n^4-\frac{1080450}{34147}n^5-\frac{453789}{34147}n^6\right]=-\frac{14417920}{34147\,\pi^6}. \quad (18)$$

-14417920/(34147*Pi^6)

Input:

$$-\frac{14417920}{34147\,\pi^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

−0.43918835941844773294402412607790496318082203011082394182...

Open code

-0.43918835…

Property:

$-\frac{14417920}{34147\,\pi^6}$ is a transcendental number

Open code

Series representations:

- More

$$-\frac{14417920}{34147\pi^6} = -\frac{3520}{34147\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$-\frac{14417920}{34147\pi^6} = -\frac{3520}{34147\left(\sum_{k=0}^{\infty}\frac{(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)^6}$$

Open code

$$-\frac{14417920}{34147\pi^6} = -\frac{14417920}{34147\left(\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)^6}$$

Integral representations:

- More

$$-\frac{14417920}{34147\pi^6} = -\frac{3520}{34147\left(\int_0^1\sqrt{1-t^2}\,dt\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$-\frac{14417920}{34147\pi^6} = -\frac{225280}{34147\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^6}$$

Open code

$$-\frac{14417920}{34147\pi^6} = -\frac{225280}{34147\left(\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt\right)^6}$$

(13-5+1+1/2)+10^3* -1 / ((-14417920/(34147*Pi^6)))

Input:

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\times(-1)}{\frac{14417920}{34147\pi^6}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\frac{19}{2}+\frac{853675\,\pi^6}{360448}$$

Decimal approximation:

- More digits

2286.427378776960935507403518843160614472744815575582247268…

Open code

2286.427… result practically equal to the rest mass of charmed Lambda baryon 2286.46

Property:

$$\frac{19}{2}+\frac{853675\,\pi^6}{360448} \text{ is a transcendental number}$$

Series representations:

- More

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}=\frac{19}{2}+\frac{806722875\sum_{k=1}^{\infty}\frac{1}{k^6}}{360448}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}=\frac{19}{2}+\frac{12805125\sum_{k=0}^{\infty}\frac{1}{(1+2k)^6}}{5632}$$

Open code

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}=\frac{19}{2}+\frac{853675}{88}\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^6$$

Open code

- More information

Integral representations:

- More

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}=\frac{19}{2}+\frac{853675}{88}\left(\int_0^1\sqrt{1-t^2}\,dt\right)^6$$

Open code

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}=\frac{19}{2}+\frac{853675\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^6}{5632}$$

Open code

$$\left(13-5+1+\frac{1}{2}\right)+-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}} = \frac{19}{2}+\frac{853675\left(\int_0^1 \frac{1}{\sqrt{1-t^2}}\,dt\right)^6}{5632}$$

((((10^3* -1 / ((-14417920/(34147*Pi^6))))))^1/15

Input:

$$\sqrt[15]{-\frac{10^3\times(-1)}{\frac{14417920}{34147\,\pi^6}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$\frac{1}{2}\times 5^{2/15}\sqrt[15]{\frac{34147}{11}}\;\pi^{2/5}$$

Decimal approximation:

- More digits

1.674261453589701148777513748814570022377105994104271344799...

Open code

1.6742614… result very near to the neutron mass

Property:

$$\frac{1}{2}\times 5^{2/15}\sqrt[15]{\frac{34147}{11}}\;\pi^{2/5}$$ is a transcendental number

Series representations:

- More

$$\sqrt[15]{-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}} = \frac{5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^{2/5}}{\sqrt[5]{2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\sqrt[15]{-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}} = \frac{1}{2}\times 5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\sum_{k=0}^{\infty}-\frac{4\,(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}\right)^{2/5}$$

Open code

$$\sqrt[15]{-\frac{10^3\,(-1)}{\frac{14417920}{34147\,\pi^6}}} = \frac{1}{2}\times 5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)\right)^{2/5}$$

Open code

Integral representations:

- More

$$\sqrt[15]{-\frac{10^3(-1)}{\frac{14417920}{34147\pi^6}}} = \frac{5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\int_0^1\sqrt{1-t^2}\,dt\right)^{2/5}}{\sqrt[5]{2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\sqrt[15]{-\frac{10^3(-1)}{\frac{14417920}{34147\pi^6}}} = \frac{5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\int_0^\infty\frac{1}{1+t^2}\,dt\right)^{2/5}}{2^{3/5}}$$

Open code

$$\sqrt[15]{-\frac{10^3(-1)}{\frac{14417920}{34147\pi^6}}} = \frac{5^{2/15}\sqrt[15]{\frac{34147}{11}}\left(\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt\right)^{2/5}}{2^{3/5}}$$

$$\sum_{n=0}^{\infty} c_6(n)\left(\frac{47-21\sqrt{5}}{128}\right)^n\left[1+\left(\frac{2877117109830+924178552332\sqrt{5}\,n}{293049243769}\right)+\right.$$
$$\left(\frac{15689590644975+6660423786240\sqrt{5}}{293049243769}\right)n^2+$$
$$\left(\frac{51863088153600+23066524139820\sqrt{5}}{293049243769}\right)n^3+$$
$$\left(\frac{106483989569175+47630637457200\sqrt{5}}{293049243769}\right)n^4+ \qquad (19)$$
$$\left(\frac{130261549416750+58266415341540\sqrt{5}}{293049243769}\right)n^5+$$
$$\left.\left(\frac{75619648012725+33817435224300\sqrt{5}}{293049243769}\right)n^6\right]=$$
$$\frac{20185088}{\left(11556387-5162500\sqrt{5}\right)\pi^6}.$$

((20185088/((((11556387-5162500*sqrt(5))*Pi^6))

Input:

$$\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

1.6550245452208743085690290794772376349900896228670200389 59...

Open code

1.65502454…. is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164{,}2696$ i.e. 1,65578...

Property:

$$\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6}$$ is a transcendental number

Series representations:

- More

$$\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6} = \frac{20\,185\,088}{\pi^6\left(11\,556\,387-5\,162\,500\sqrt{4}\sum_{k=0}^{\infty}4^{-k}\binom{\frac{1}{2}}{k}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6} = \frac{20\,185\,088}{\pi^6\left(11\,556\,387-5\,162\,500\sqrt{4}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{4}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

Open code

$$\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6} = \frac{20\,185\,088\sqrt{\pi}}{\pi^6\left(11\,556\,387\sqrt{\pi}-2\,581\,250\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}4^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)}$$

89+10^3((20185088/((((11556387-5162500*sqrt(5))*Pi^6))

Input:

$$89+10^3\times\frac{20\,185\,088}{\left(11\,556\,387-5\,162\,500\sqrt{5}\right)\pi^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$89+\frac{20\,185\,088\,000}{(11\,556\,387-5\,162\,500\sqrt{5})\pi^6}$$

Decimal approximation:

- More digits

1744.024545220874308569029079477237634990089622867020038959...

Open code

1744.0245… result in the range of the mass of candidate "glueball" $f_0(1710)$

Property:

$$89+\frac{20\,185\,088\,000}{(11\,556\,387-5\,162\,500\sqrt{5})\pi^6} \text{ is a transcendental number}$$

Series representations:

- More

$$89+\frac{10^3\times 20\,185\,088}{(11\,556\,387-5\,162\,500\sqrt{5})\pi^6}=89+\frac{20\,185\,088\,000}{\pi^6\left(11\,556\,387-5\,162\,500\sqrt{4}\sum_{k=0}^{\infty}4^{-k}\binom{\frac{1}{2}}{k}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$89+\frac{10^3\times 20\,185\,088}{(11\,556\,387-5\,162\,500\sqrt{5})\pi^6}=89+\frac{20\,185\,088\,000}{\pi^6\left(11\,556\,387-5\,162\,500\sqrt{4}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{4}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)}$$

Open code

$$89+\frac{10^3\times 20\,185\,088}{(11\,556\,387-5\,162\,500\sqrt{5})\pi^6}=89+\frac{20\,185\,088\,000\sqrt{\pi}}{\pi^6\left(11\,556\,387\sqrt{\pi}-2\,581\,250\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}4^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)}$$

From (52-54-55-57), we obtain:

$$Y_{\sqrt{-12/5}}=\frac{5}{12}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right).$$

(((5/12*(1690+975*sqrt(3)+29*sqrt((6755+3900*sqrt(3))))))

Input:

$$\frac{5}{12}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

2812.2885616728013072228156575403965291682426280891889658 41...

2812.2885...

-55+8+(((5/12*(1690+975*sqrt(3)+29*sqrt((6755+3900*sqrt(3))))))

Input:

$$-55+8+\frac{5}{12}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\frac{5}{12}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right)-47$$

Decimal approximation:

- More digits

2765.2885616728013072228156575403965291682426280891889658 41...

2765.288... result very near to the rest mass of charmed Omega baryon 2765.9

((((((5/12*(1690+975*sqrt(3)+29*sqrt((6755+3900*sqrt(3))))))^1/16

Input:

$$\sqrt[16]{\frac{5}{12}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$\frac{\sqrt[16]{\frac{5}{3}\left(1690+975\sqrt{3}+29\sqrt{6755+3900\sqrt{3}}\right)}}{\sqrt[8]{2}}$$

Decimal approximation:

- More digits

1.6427302046615690451565362425604374030436235786652908 69076...

Open code

$1.6427302.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

$$Y_{\sqrt{-17/5}} = \frac{5}{8}\left(5360 + 585\sqrt{85} + 4\sqrt{3613670 + 391950\sqrt{85}}\right).$$

(((5/8*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85)))))

Input:

$$\frac{5}{8}\left(5360 + 585\sqrt{85} + 4\sqrt{3613670 + 391950\sqrt{85}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

13441.79173909299408678630634786085775597719464366959253521...

13441.791...

(((((5/8*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85))))))^1/19

Input:

$$\sqrt[19]{\frac{5}{8}\left(5360 + 585\sqrt{85} + 4\sqrt{3613670 + 391950\sqrt{85}}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$\frac{\sqrt[19]{5\left(5360 + 585\sqrt{85} + 4\sqrt{3613670 + 391950\sqrt{85}}\right)}}{2^{3/19}}$$

Decimal approximation:

- More digits

1.649252758226774763635755334786154013469214623842695314763...

Open code

$1.64925.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

$$Y_{\sqrt{-68/5}} = Y_{\sqrt{-17/5}}\, 2^{-1}\left(\sqrt{x+4} - \sqrt{x}\right) = \frac{5}{16}$$

$$\left(5360 + 585\sqrt{85} + 4\sqrt{3\,613\,670 + 391\,950\sqrt{85}}\right)\left(\sqrt{x+4} - \sqrt{x}\right).$$

(((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85))))))

Input:

$$\frac{5}{16}\left(5360 + 585\sqrt{85} + 4\sqrt{3\,613\,670 + 391\,950\sqrt{85}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

6720.895869546497043393153173930428877988597321834796267607...

6720.895...

$$x = a_1 + b_1\sqrt{85} + c\sqrt{a_2 + b_2\sqrt{85}}\,,$$

(2891581250+31363605)*sqrt(85)+12960*sqrt(((99557521554+10798529365*sqrt(85)))

Input:

$$(2\,891\,581\,250 + 31\,363\,605)\sqrt{85} + 12\,960\sqrt{99\,557\,521\,554 + 10\,798\,529\,365\sqrt{85}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Exact result:

$$2\,922\,944\,855\sqrt{85} + 12\,960\sqrt{99\,557\,521\,554 + 10\,798\,529\,365\sqrt{85}}$$

Decimal approximation:

- More digits

$3.2731271240577003545230438291944172298039968487603276... \times 10^{10}$

$3.2731271... * 10^{10}$

sqrt(32731271240.5770035452304382919441722980399684876032764+4)-sqrt(32731271240.5770035452304382919441722980399684876032764)

Input interpretation:

$$\sqrt{3.273127124057700354523043829194417229803996848760327 6\times 10^{10}+4}-\sqrt{3.2731271240577003545230438291944172298039968487603276\times 10^{10}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.00001105474067174463543170852211089438287134988...

0.0000110547...

In conclusion, we have:

$$Y_{\sqrt{-68/5}} = Y_{\sqrt{-17/5}}\, 2^{-1}\left(\sqrt{x+4}-\sqrt{x}\right) = \frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\left(\sqrt{x+4}-\sqrt{x}\right).$$

(((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85))))))*0.00001105474067174463543170852211089438287134988

Input interpretation:

$$\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.00001105474067174463543170852211089438287134988$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.07429776091963618838846732116382115833223437...

0.07429776...

1+((((((((((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85))))))*0.0000110547406)))))))^1/6

Input interpretation:

$$1+\sqrt[6]{\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.0000110547406}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.648379518...

$1.648379... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

colog((((((((((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85)))))*0.0000110547406)))))))

Input interpretation:

$$-\log\left(\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.0000110547406\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

2.59967447...

2.599674...

Series representations:

- More

$$-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right) = \sum_{k=1}^{\infty}\frac{1}{k}(-1)^k\left(-0.981483+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)^k$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right) = -\log\left(0.0185167+\sum_{k=0}^{\infty}\binom{\frac{1}{2}}{k}\left(0.00202094\times 84^{-k}\sqrt{84}+0.0000138184\left(3613669+391950\sqrt{85}\right)^{-k}\sqrt{3613669+391950\sqrt{85}}\right)\right)$$

Open code

$$-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)=$$

$$-2 i \pi \left\lfloor \frac{1}{2\pi} \arg\left(0.0185167 - x + 0.00202094\sqrt{85} + 0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right\rfloor - \log(x) + \sum_{k=1}^{\infty} \frac{1}{k} (-1)^k x^{-k} \left(0.0185167 - x + 0.00202094\sqrt{85} + 0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)^k \quad \text{for } x < 0$$

Integral representation:

$$-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)=$$

$$-\int_1^{0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}} \frac{1}{t}\,dt$$

sqrt((((((colog(((((((((((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85)))))*0.0000110547406))))))))))))

Input interpretation:

$$\sqrt{-\log\left(\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.0000110547406\right)}$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.612350604...

1.61235...

This result is an approximation to the value of the golden ratio 1,618033988749...

Series representations:

- More

$$\sqrt{-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)} = \sqrt{\left(\sum_{k=1}^{\infty}\frac{1}{k}(-1)^k\left(-0.981483+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)^k\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\sqrt{-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)} = \sqrt{\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)} \sum_{k=0}^{\infty}\binom{\frac{1}{2}}{k}\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)^{-k}$$

Open code

$$\sqrt{-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)} = \sqrt{\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)} \sum_{k=0}^{\infty}\frac{1}{k!}(-1)^k\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)^{-k}\left(-\frac{1}{2}\right)_k$$

Integral representation:

$$\sqrt{-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)} =$$

$$\sqrt{-\int_1^{0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}}\frac{1}{t}\,dt}$$

12^2+10^3*sqrt((((((colog((((((((((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85)))))*0.0000110547406)))))))))))

Input interpretation:

$$12^2+10^3\sqrt{\left(-\log\left(\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.0000110547406\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

1756.350604...

1756.35... result in the range of the mass of candidate "glueball" $f_0(1710)$

Series representations:

- More

$$12^2+10^3\sqrt{\left(-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\right)} =$$

$$144+1000\sqrt{\left(\sum_{k=1}^{\infty}\frac{1}{k}(-1)^k\left(-0.981483+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)^k\right)}$$

Open code

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$$12^2+10^3\sqrt{\left(-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\right)}=$$

$$144+1000\sqrt{\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)}$$

$$\sum_{k=0}^{\infty}\binom{\frac{1}{2}}{k}\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)^{-k}$$

Open code

$$12^2+10^3\sqrt{\left(-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\right)}=$$

$$144+1000\sqrt{\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)}$$

$$\sum_{k=0}^{\infty}\frac{1}{k!}(-1)^k\left(-1-\log\left(0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}\right)\right)^{-k}\left(-\frac{1}{2}\right)_k$$

Integral representation:

$$12^2+10^3\sqrt{\left(-\log\left(\frac{1}{16}\times 0.0000110547\times 5\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\right)}=$$

$$144+1000\sqrt{-\int_1^{0.0185167+0.00202094\sqrt{85}+0.0000138184\sqrt{3613670+391950\sqrt{85}}}\frac{1}{t}\,dt}$$

((((((((12^2+10^3*sqrt((((((colog(((((((((((5/16*(5360+585*sqrt(85)+4*sqrt((3613670+391950*sqrt(85)))))*0.0000110547406))))))))))))))))))^1/15

Input interpretation:

$$\left(12^2+10^3\sqrt{\left(-\log\left(\left(\frac{5}{16}\left(5360+585\sqrt{85}+4\sqrt{3613670+391950\sqrt{85}}\right)\right)\times 0.0000110547406\right)\right)}\right)^{\wedge}(1/15)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

1.6455360998...

$1.645536.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

From the seven results, we obtain the following interesting expression:

-5+26^2 + 1/4 * -((((1.06899199*0.35963635* (-0.43918835)* 1.65502454 * 2812.2885 * 13441.791 * 0.07429776)))

Input interpretation:

$$-5+26^2+\frac{1}{4}\times(-1)(1.06899199\times 0.35963635\times(-0.43918835)\times 1.65502454\times 2812.2885\times 13441.791\times 0.07429776)$$

Open code

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Result:

196883.20573988726520741308793296865252997047275939

Open code

196883.2057...

196884/196883 is a fundamental number of the following j-invariant

$$j(\tau) = q^{-1} + 744 + 196884q + 21493760q^2 + 864299970q^3 + 20245856256q^4 + \cdots$$

(In mathematics, Felix Klein's j-invariant or j function, regarded as a function of a complex variable τ, is a modular function of weight zero for SL(2, Z) defined on the upper half plane of complex numbers. Several remarkable properties of j have to do with its q expansion (Fourier series expansion), written as a Laurent series in terms of $q = e^{2\pi i\tau}$ (the square of the nome), which begins:

$$j(\tau) = q^{-1} + 744 + 196884q + 21493760q^2 + 864299970q^3 + 20245856256q^4 + \cdots$$

Note that j has a simple pole at the cusp, so its q-expansion has no terms below q^{-1}.

All the Fourier coefficients are integers, which results in several almost integers, notably Ramanujan's constant:

$$e^{\pi\sqrt{163}} \approx 640320^3 + 744.$$

The asymptotic formula for the coefficient of q^n is given by

$$\frac{e^{4\pi\sqrt{n}}}{\sqrt{2}\,n^{3/4}},$$

as can be proved by the Hardy–Littlewood circle method)

1/(27*4+4) * ((((((-5+26^2 + 1/4 * -((((1.06899199*0.35963635* (-0.43918835)* 1.65502454 * 2812.2885 * 13441.791 * 0.07429776))))))))

Input interpretation:

$$\frac{1}{27\times 4+4}\left(-5+26^2+\frac{1}{4}\times(-1)(1.06899199\times 0.35963635\times(-0.43918835)\times 1.65502454\times 2812.2885\times 13441.791\times 0.07429776)\right)$$

Open code

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Result:

- More digits

1757.8857655347077250661882851157915404461649353516964285714...

Open code

1757.885… result in the range of the mass of candidate "glueball" $f_0(1710)$

1/(27*4+6) * ((((((-5+26^2 + 1/4 * -((((1.06899199*0.35963635* (-0.43918835)* 1.65502454 * 2812.2885 * 13441.791 * 0.07429776))))))))

Input interpretation:

$$\frac{1}{27\times 4+6}\left(-5+26^2+\frac{1}{4}\times(-1)(1.06899199\times 0.35963635\times(-0.43918835)\times 1.65502454\times 2812.2885\times 13441.791\times 0.07429776)\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1727.0456643849760105913428766049881800874602873630701754 38...

1727.0456... result very near to the mass of candidate "glueball" $f_0(1710)$

Now, we have that:

$$Y_{\sqrt{-4/5}} = \frac{5}{16}\left(25 + 13\sqrt{5} + 5\sqrt{58 + 26\sqrt{5}}\right).$$

$$Y_{\sqrt{-5/5}} = \frac{125}{8}\left(2 + \sqrt{5}\right).$$

5/16((((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5))))))))

Input:

$$\frac{5}{16}\left(25 + 13\sqrt{5} + 5\sqrt{58 + 26\sqrt{5}}\right)$$

Decimal approximation:

33.73515648377118771946346976952828575083085033965849582103...

33.735156...

125/8(2+sqrt(5))

Input:

$$\frac{125}{8}\left(2 + \sqrt{5}\right)$$

Decimal approximation:

66.18856214843421400639333857392619117875966186893008944173...

66.18856...

(((125/8(2+sqrt(5))))-((((((5/16((((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5))))))))

Input:

$$\frac{125}{8}\left(2 + \sqrt{5}\right) - \frac{5}{16}\left(25 + 13\sqrt{5} + 5\sqrt{58 + 26\sqrt{5}}\right)$$

Decimal approximation:

- More digits

32.45340566466302628692986880439790542792881152927159362069...

(((((((27*2*(((125/8(2+sqrt(5))))-
((((((5/16(((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5)))))))))

Input:

$$27\times 2\left(\frac{125}{8}\left(2+\sqrt{5}\right)-\frac{5}{16}\left(25+13\sqrt{5}+5\sqrt{58+26\sqrt{5}}\right)\right)$$

Result:

$$54\left(\frac{125}{8}\left(2+\sqrt{5}\right)-\frac{5}{16}\left(25+13\sqrt{5}+5\sqrt{58+26\sqrt{5}}\right)\right)$$

Decimal approximation:

- More digits

1752.4839058918034194942129154374868931081558225806660555517...

1752.483905…

result in the range of the mass of candidate "glueball" $f_0(1710)$

(((((((((((((((((27*2(((125/8(2+sqrt(5))))-
((((((5/16(((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5))))))))))))))))))))))^1/15

Input:

$$\sqrt[15]{27\times 2\left(\frac{125}{8}\left(2+\sqrt{5}\right)-\frac{5}{16}\left(25+13\sqrt{5}+5\sqrt{58+26\sqrt{5}}\right)\right)}$$

Exact result:

$$\sqrt[5]{3}\ \sqrt[15]{2\left(\frac{125}{8}\left(2+\sqrt{5}\right)-\frac{5}{16}\left(25+13\sqrt{5}+5\sqrt{58+26\sqrt{5}}\right)\right)}$$

Decimal approximation:

- More digits

1.645294335702053512287917801651138525998140861654137310651...

1.6452943... ≈ $\zeta(2) = \frac{\pi^2}{6} = 1.6449$

-18+32(((125/8(2+sqrt(5))))-
((((((5/16(((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5)))))))))

Input:

$$-18+32\left(\frac{125}{8}\left(2+\sqrt{5}\right)-\frac{5}{16}\left(25+13\sqrt{5}+5\sqrt{58+26\sqrt{5}}\right)\right)$$

Decimal approximation:

- More digits

1020.5089812692168411817558017407329736937219689366909958 62...

1020.508… result very near to the rest mass of Phi meson 1019.445

Furthermore:

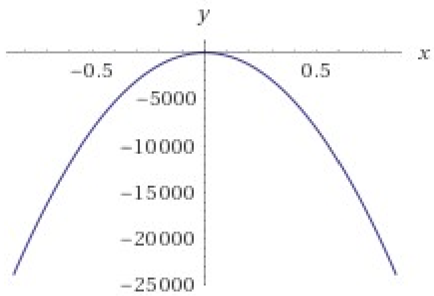
integrate (((125/8(2+sqrt(5))))-((((((5/16((((((25+13*sqrt(5)+5*sqrt((((58+26*sqrt(5)))))))))))x

Indefinite integral:

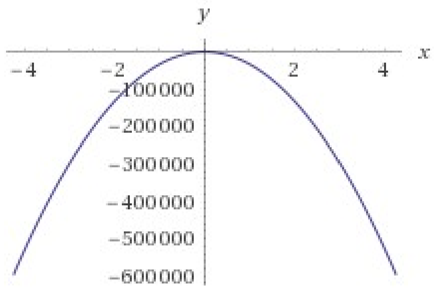
- Approximate form
- Step-by-step solution

$$\int \left(\frac{125}{8}\left(2\sqrt{5}\right) - \frac{5}{16}\left(\left(25\left(13\sqrt{5}\right)\left(5\sqrt{58\times 26\sqrt{5}}\right)\right)x\right)\right)dx = \frac{125\sqrt{5}\,x}{4} - \frac{8125}{16}\times 5^{3/4}\sqrt{377}\,x^2 + \text{constant}$$

Plots of the integral:



(x from -0.8 to 0.9)



(x from -4.2 to 4.2)

For x = 0.065578, we obtain:

(125 sqrt(5) -((0.065578)/4) - 8125/16 5^(3/4) sqrt(377) (-0.065578)^2

Input:

$$125\sqrt{5} - \frac{0.065578}{4} - \frac{8125}{16} \times 5^{3/4}\sqrt{377}\,(-0.065578)^2$$

Result:

- More digits

137.711...

137.711... result very near to the rest mass of Pion meson 139.57

Now, we have that:

$$Y_{\sqrt{-6/5}} = \frac{5}{8}\left(50 + 35\sqrt{2} + 3\sqrt{5\left(99 + 70\sqrt{2}\right)}\right). \qquad (50)$$

$$Y_{\sqrt{-9/5}} = \frac{5}{8}\left(225 + 104\sqrt{5} + 10\sqrt{1047 + 468\sqrt{5}}\right). \qquad (51)$$

5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2)))))

5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2)))))

Input:

$$\frac{5}{8}\left(50 + 35\sqrt{2} + 3\sqrt{5\left(99 + 70\sqrt{2}\right)}\right)$$

Decimal approximation:

- More digits

121.180666945674750195396972223241882312490517674945921983 5...

121.18066…

5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5)))))

5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5)))))

Input:

$$\frac{5}{8}\left(225 + 104\sqrt{5} + 10\sqrt{1047 + 468\sqrt{5}}\right)$$

Decimal approximation:

- More digits

571.9354221352357435599237562067250705239776841952772541041...

571.93542…

89+(((((5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5))))))))))+(((((((((5/8(50+35 sqrt(2)+3*((((sqrt((5*(99+70sqrt(2)))))))))

Input:

$$89+\left(\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)\right)$$

Result:

$$89+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)+\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)$$

Decimal approximation:

- More digits

782.1160890809104937553207284299669528364682018702231760877...

782.116…. result very near to the rest mass of Omega meson 782.65

10^3+36+(((((5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5))))))))))+(((((((((5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2)))))))))

Input:

$$10^3+36+\left(\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)\right)$$

Result:

$$1036+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)+\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)$$

Decimal approximation:

- More digits

1729.116089080910493755320728429966952836468201870223176087...

1729.116…

This result is very near to the mass of candidate glueball $f_0(1710)$ 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

(1729.1160890809104937553207284299669528364682018702231760 87)^1/15

Input interpretation:

$$\sqrt[15]{1729.116089080910493755320728429966952836468201870223176087}$$

Result:

- More digits

1.6438225864900078498792874026111316610521985457517159283 36...

1.643822586…. ≈ $\zeta(2) = \frac{\pi^2}{6} = 1.644934$ ...

And:

1.0061571663^9*10^3+36+(((((5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5))))))))))+(((((((((5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2))))))))

$$1.0061571663^9 \times 10^3 + 36 + \left(\frac{5}{8}\left(225 + 104\sqrt{5} + 10\sqrt{1047 + 468\sqrt{5}}\right) + \frac{5}{8}\left(50 + 35\sqrt{2} + 3\sqrt{5\left(99 + 70\sqrt{2}\right)}\right)\right)$$

1785.915161...

1785.915…. result in the range of the hypothetical mass of Gluino (gluino = 1785.16 GeV).

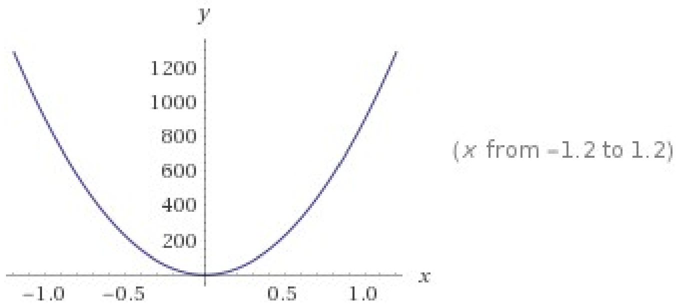
Now:

integrate [1785.915161]x

Indefinite integral:

$$\int 1785.915161\, x\, dx = 892.958\, x^2 + \text{constant}$$

Plot of the integral:



For x =

892.958 ((sqrt(5)/2))^2

Input interpretation:

$$892.958\left(\frac{\sqrt{5}}{2}\right)^2$$

Result:

1116.1975

1116.1975 is very near to the rest mass of Lambda baryon 1115.683

integrate (((((5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5))))))))))+(((((((((5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2)))))))))))x

Indefinite integral:

- Exact form
- Step-by-step solution

Indefinite integral:

- Exact form
- Step-by-step solution

$$\int\left(\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)x\right)dx \approx$$

constant + $60.5903\,x^2 + 571.935\,x$

For x = 2

60.5903*2^2+571.935*2

$$60.5903 \times 2^2 + 571.935 \times 2$$

1386.2312

And:

sqrt[integrate(((((5/8(225+104sqrt(5)+10*((((sqrt((1047+468sqrt(5))))))))))+(((((((((5/8(50+35sqrt(2)+3*((((sqrt((5*(99+70sqrt(2))))))))))x]

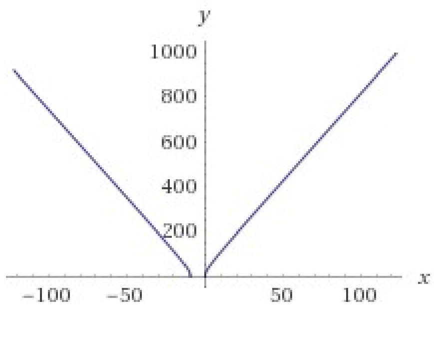
Input:

$$\sqrt{\int \left(\frac{5}{8}\left(225 + 104\sqrt{5} + 10\sqrt{1047 + 468\sqrt{5}}\right) + \frac{5}{8}\left(50 + 35\sqrt{2} + 3\sqrt{5\left(99 + 70\sqrt{2}\right)}\right)x\right)dx}$$

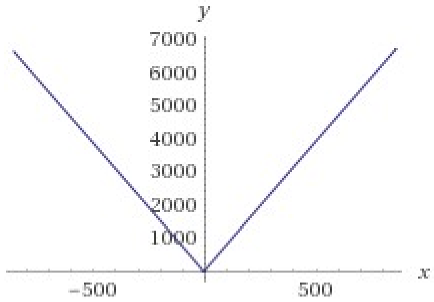
Exact result:

$$\sqrt{\frac{15}{16}\sqrt{5\left(99 + 70\sqrt{2}\right)}\,x^2 + \frac{175x^2}{8\sqrt{2}} + \frac{125x^2}{8} + \frac{25}{4}\sqrt{1047 + 468\sqrt{5}}\,x + 65\sqrt{5}\,x + \frac{1125x}{8}}$$

Plots:



(x from −122.5 to 122.5)



(x from -857.4 to 857.4)

-

Series expansion of the integral at x = ∞:

$$\frac{1}{4}\sqrt{5\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)}\,x+\frac{1}{4}\sqrt{\frac{5}{50+35\sqrt{2}+3\sqrt{5(99+70\sqrt{2})}}}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)-\frac{\sqrt{5}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)^2}{8\left(50+35\sqrt{2}+3\sqrt{5(99+70\sqrt{2})}\right)^{3/2}x}+\frac{\sqrt{5}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)^3}{8\left(50+35\sqrt{2}+3\sqrt{5(99+70\sqrt{2})}\right)^{5/2}x^2}+O\left(\left(\frac{1}{x}\right)^3\right)$$

(Laurent series)

Indefinite integral:

$$\sqrt{\left(\int\left(\frac{5}{8}\left(225+104\sqrt{5}+10\sqrt{1047+468\sqrt{5}}\right)+\frac{5}{8}\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)x\right)dx\right)}=\sqrt{\left(\frac{5}{16}x\left(\left(50+35\sqrt{2}+3\sqrt{5\left(99+70\sqrt{2}\right)}\right)x+20\sqrt{1047+468\sqrt{5}}+208\sqrt{5}+450\right)+\text{constant}\right)}$$

From:

$$\sqrt{\left(\frac{15}{16}\sqrt{5\left(99+70\sqrt{2}\right)}\,x^2+\frac{175\,x^2}{8\sqrt{2}}+\frac{125\,x^2}{8}+\frac{25}{4}\sqrt{1047+468\sqrt{5}}\,x+65\sqrt{5}\,x+\frac{1125\,x}{8}\right)}$$

For x = 2, we obtain:

$$\sqrt{\left(\frac{15}{16}\sqrt{5\left(99+70\sqrt{2}\right)}\times 2^2+\frac{175\times 2^2}{8\sqrt{2}}+\frac{1}{8}\left(125\times 2^2\right)+\frac{25}{4}\sqrt{1047+468\sqrt{5}}\times 2+65\sqrt{5}\times 2+\frac{1125\times 2}{8}\right)}$$

$$\sqrt{\frac{1375}{4}+\frac{175}{2\sqrt{2}}+130\sqrt{5}+\frac{15}{4}\sqrt{5\left(99+70\sqrt{2}\right)}+\frac{25}{2}\sqrt{1047+468\sqrt{5}}}$$

37.232139048969789045864397122919438017330263953906902720 58...

And:

(((((15/16 sqrt(5 (99 + 70 sqrt(2))) 2^2 + (175 2^2)/(8 sqrt(2)) + (125 2^2)/8 + 25/4 sqrt(1047 + 468 sqrt(5))*2 + 65 sqrt(5)*2 + (1125*2)/8)))))^1/15

$$\left(\frac{15}{16}\sqrt{5\left(99+70\sqrt{2}\right)}\times 2^2+\frac{175\times 2^2}{8\sqrt{2}}+\frac{1}{8}\left(125\times 2^2\right)+\frac{25}{4}\sqrt{1047+468\sqrt{5}}\times 2+65\sqrt{5}\times 2+\frac{1125\times 2}{8}\right)\hat{}\,(1/15)$$

$$\sqrt[15]{\frac{1375}{4}+\frac{175}{2\sqrt{2}}+130\sqrt{5}+\frac{15}{4}\sqrt{5\left(99+70\sqrt{2}\right)}+\frac{25}{2}\sqrt{1047+468\sqrt{5}}}$$

1.6197788790191408316840953588469143345083652381395945272 63...

1.619778...

This result is a very good approximation to the value of the golden ratio 1,618033988749...

And:

1.0061571663^3(((((15/16 sqrt(5 (99 + 70 sqrt(2))) 2^2 + (175 2^2)/(8 sqrt(2)) + (125 2^2)/8 + 25/4 sqrt(1047 + 468 sqrt(5))*2 + 65 sqrt(5)*2 + (1125*2)/8)))))^1/15

$$1.0061571663^3 \left(\frac{15}{16}\sqrt{5\left(99+70\sqrt{2}\right)}\times 2^2+\frac{175\times 2^2}{8\sqrt{2}}+\frac{1}{8}\left(125\times 2^2\right)+\frac{25}{4}\sqrt{1047+468\sqrt{5}}\times 2+65\sqrt{5}\times 2+\frac{1125\times 2}{8}\right)\text{^}(1/15)$$

1.6498832217...

$1.649883.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$

From:

Eisenstein series and Ramanujan-type series for 1/π
Article *in* The Ramanujan Journal · December 2010
NAYANDEEP DEKA BARUAH and BRUCE C. BERNDT

As with the Borweins in their proofs, we begin with Clausen's formulas. We quote Theorems 5.7(i)–(vi) and Formula (5.5.9) in [14, pp. 180–181]. Let

$$A_k := \frac{\left(\frac{1}{2}\right)_k^3}{k!^3}, \quad B_k := \frac{\left(\frac{1}{4}\right)_k\left(\frac{1}{2}\right)_k\left(\frac{3}{4}\right)_k}{k!^3}, \quad C_k := \frac{\left(\frac{1}{6}\right)_k\left(\frac{1}{2}\right)_k\left(\frac{5}{6}\right)_k}{k!^3}, \tag{3.2}$$

From:

$$C_k := \frac{\left(\frac{1}{6}\right)_k\left(\frac{1}{2}\right)_k\left(\frac{5}{6}\right)_k}{k!^3},$$

we obtain, (for k = 1):

1/6*1/2*5/6

Input:

$$\frac{1}{6}\times\frac{1}{2}\times\frac{5}{6}$$

Open code

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Exact result:

- Step-by-step solution

$$\frac{5}{72}$$

Decimal approximation:

- More digits

0.069444444444444444444444444444444444444444444444444444...

Open code

Now, we have that:

Theorem 4.1. *If A_k and C_k, $k \geq 0$, are defined by (3.2), then*

$$\frac{1}{\pi} = \sum_{k=0}^{\infty} \{(8-5\sqrt{2})k + 3 - 2\sqrt{2}\} A_k (2\sqrt{2}-2)^{3k}, \qquad (4.1)$$

$$\frac{2}{\pi} = \sum_{k=0}^{\infty} (-1)^k (4k+1) A_k, \qquad (4.2)$$

$1/\pi = 0.31830988618$; $2/\pi = 0.63661977$

From (4.1), for k = 0.070741 and $A_k = (1/2)^3/(0.070741!)^3$, we obtain:

10((((((8-5sqrt(2)))*0.070741+3-2sqrt(2)))))*((1/2)^3)/((0.070741!)^3))*(((2sqrt(2)-2)^(3*0.070741)))

Input:

$$10\left(\left(8-5\sqrt{2}\right)\times 0.070741+3-2\sqrt{2}\right)\times\frac{\left(\frac{1}{2}\right)^3}{(0.070741!)^3}\left(2\sqrt{2}-2\right)^{3\times 0.070741}$$

Open code

- $n!$ is the factorial function

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Result:

- More digits

0.318309...

0.318309...

Series representations:

$$\frac{10\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3} = -\frac{3.40838\left(-1+\sqrt{2}\right)^{0.212223}\left(-1.51503+\sqrt{2}\right)}{\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3}$$

for (($n_0 \notin \mathbb{Z}$ or $n_0 \geq 0$) and $n_0 \to 0.070741$)

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$$\frac{10\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3} = -\left(\left(2.94213\left(-1.51503+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\left(-2+2\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}\right)\Big/\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $(z_0 \notin \mathbb{R}$ or not $(-\infty < z_0 \leq 0))$ and $n_0 \to 0.070741)$

$$\frac{10\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3} = -\left(\left(2.94213\left(-1.51503+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\left(-2+2\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^{0.212223}\right)\Big/\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)$$

for $(x \in \mathbb{R}$ and $(n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $x < 0$ and $n_0 \to 0.070741)$

$$\frac{10\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3} = -\left(\left(2.94213\left(-1.51503+\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\left(-2+2\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}\right)\Big/\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $n_0 \to 0.070741)$

Integral representations:

$$\frac{10\left(\frac{1}{2}\right)^3\left((8-5\sqrt{2})\,0.070741+3-2\sqrt{2}\right)(2\sqrt{2}-2)^{3\times 0.070741}}{(0.070741!)^3} = -\frac{3.40838\left(-1+\sqrt{2}\right)^{0.212223}\left(-1.51503+\sqrt{2}\right)}{\left(\int_0^1 \log^{0.070741}\left(\frac{1}{t}\right)dt\right)^3}$$

Open code

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$$\frac{10\left(\frac{1}{2}\right)^3\left((8-5\sqrt{2})\,0.070741+3-2\sqrt{2}\right)(2\sqrt{2}-2)^{3\times 0.070741}}{(0.070741!)^3} = -\frac{3.40838\left(-1+\sqrt{2}\right)^{0.212223}\left(-1.51503+\sqrt{2}\right)}{\left(\int_1^\infty e^{-t}\,t^{0.070741}\,dt+\sum_{k=0}^\infty \frac{(-1)^k}{(1.07074+k)k!}\right)^3}$$

Open code

We note that:

1.0061571663+20(((((8-5sqrt(2)))*0.070741+3-2sqrt(2)))))*((1/2)^3)/((0.070741!)^3))*(((2sqrt(2)-2)^(3*0.070741)))

where 1.0061571663 is a Ramanujan mock theta function of 7th order very near to the value of equation of state of dark energy that is constrained to w = -1.006 ± 0.045

Input interpretation:

$$1.0061571663+20\left(\left(8-5\sqrt{2}\right)\times 0.070741+3-2\sqrt{2}\right)\times\frac{\left(\frac{1}{2}\right)^3}{(0.070741!)^3}\left(2\sqrt{2}-2\right)^{3\times 0.070741}$$

Open code

- $n!$ is the factorial function

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Result:

- More digits

1.642775...

$$1.642775.... \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 ...$$

Series representations:

$$1.00615716630000+\frac{20\left(\frac{1}{2}\right)^3\left((8-5\sqrt{2})\,0.070741+3-2\sqrt{2}\right)(2\sqrt{2}-2)^{3\times0.070741}}{(0.070741!)^3}=$$

$$1.00615716630000+\frac{(10.3276-6.81675\sqrt{2})(-1+\sqrt{2})^{0.212223}}{\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3}$$

for $((n_0\notin\mathbb{Z}\text{ or }n_0\geq0)\text{ and }n_0\to0.070741)$

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$$1.00615716630000+\frac{20\left(\frac{1}{2}\right)^3\left((8-5\sqrt{2})\,0.070741+3-2\sqrt{2}\right)(2\sqrt{2}-2)^{3\times0.070741}}{(0.070741!)^3}=$$

$$-\left(\left(5.88426\left(-1.51503\left(-2+2\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}+\sqrt{z_0}\left(\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\left(-2+2\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}-0.170991\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)\right)\Big/\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)$$

for $((n_0\notin\mathbb{Z}\text{ or }n_0\geq0)\text{ and }(z_0\notin\mathbb{R}\text{ or not }(-\infty<z_0\leq0))$
$\text{and }n_0\to0.070741)$

$$1.00615716630000 + \frac{20 \left(\frac{1}{2}\right)^3 \left(\left(8 - 5\sqrt{2}\right) 0.070741 + 3 - 2\sqrt{2}\right) \left(2\sqrt{2} - 2\right)^{3 \times 0.070741}}{(0.070741!)^3} =$$

$$-\left(\left(5.88426 \left(-1.51503 \left(-2 + 2 \exp\left(i \pi \left\lfloor \frac{\arg(2-x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (2-x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right)^{0.212223} + \exp\left(i \pi \left\lfloor \frac{\arg(2-x)}{2\pi} \right\rfloor\right) \sqrt{x} \left(\sum_{k=0}^{\infty} \frac{(-1)^k (2-x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right) \left(-2 + 2 \exp\left(i \pi \left\lfloor \frac{\arg(2-x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (2-x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right)^{0.212223} - 0.170991 \left(\sum_{k=0}^{\infty} \frac{(0.070741 - n_0)^k \Gamma^{(k)}(1 + n_0)}{k!}\right)^3\right)\right) \Big/ \left(\sum_{k=0}^{\infty} \frac{(0.070741 - n_0)^k \Gamma^{(k)}(1 + n_0)}{k!}\right)^3\right)$$

for $(x \in \mathbb{R}$ and $(n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $x < 0$ and $n_0 \to 0.070741)$

$$1.00615716630000+\frac{20\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3}=$$

$$-\left(\left(5.88426\left(-1.51503\left(-2+2\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} \sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}+\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor}\left(\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\left(-2+2\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor} z_0^{1/2+1/2\lfloor\arg(2-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{0.212223}-0.170991\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)\right)\Bigg/\left(\sum_{k=0}^{\infty}\frac{(0.070741-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3\right)$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $n_0 \to 0.070741)$

Integral representations:

$$1.00615716630000+\frac{20\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3}=$$

$$1.00615716630000+\frac{\left(10.3276-6.81675\sqrt{2}\right)\left(-1+\sqrt{2}\right)^{0.212223}}{\left(\int_0^1\log^{0.070741}\left(\frac{1}{t}\right)dt\right)^3}$$

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$$1.00615716630000+\frac{20\left(\frac{1}{2}\right)^3\left(\left(8-5\sqrt{2}\right)0.070741+3-2\sqrt{2}\right)\left(2\sqrt{2}-2\right)^{3\times 0.070741}}{(0.070741!)^3}=$$

$$1.00615716630000-\frac{6.81675\left(-1+\sqrt{2}\right)^{0.212223}\left(-1.51503+\sqrt{2}\right)}{\left(\int_1^{\infty}e^{-t}\,t^{0.070741}\,dt+\sum_{k=0}^{\infty}\frac{(-1)^k}{(1.07074+k)k!}\right)^3}$$

Open code

•

From (4.2), for k = 0.955 and $A_k = (1/2)^3/(0.955!)^3$, we obtain:

((-1)^0.955 * (4*0.955+1)*((1/2)^3)/((0.955!)^3))

Input:

$$(-1)^{0.955}\,(4\times 0.955+1)\times\frac{\left(\frac{1}{2}\right)^3}{(0.955!)^3}$$

Open code

- $n!$ is the factorial function

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Result:

- More digits

$-0.630277... + 0.0897017...\,i$

Polar coordinates:

$r = 0.636628$ (radius), $\theta = 171.9°$ (angle)

Open code

0.636628

Series representation:

$$\frac{\left((-1)^{0.955}\,(4\times 0.955+1)\right)\left(\frac{1}{2}\right)^3}{(0.955!)^3} = -\frac{0.596489 - 0.084893\,i}{\left(\sum_{k=0}^{\infty}\frac{(0.955-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3}$$

for $((n_0 \notin \mathbb{Z}$ or $n_0 \geq 0)$ and $n_0 \to 0.955)$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{\left((-1)^{0.955}\,(4\times 0.955+1)\right)\left(\frac{1}{2}\right)^3}{(0.955!)^3} = -\frac{0.596489 - 0.084893\,i}{\left(\int_0^1 \log^{0.955}\left(\frac{1}{t}\right)dt\right)^3}$$

Open code

$$\frac{\left((-1)^{0.955}\,(4\times 0.955+1)\right)\left(\frac{1}{2}\right)^3}{(0.955!)^3} = -\frac{0.596489 - 0.084893\,i}{\left(\int_1^{\infty} e^{-t}\,t^{0.955}\,dt + \sum_{k=0}^{\infty}\frac{(-1)^k}{(1.955+k)\,k!}\right)^3}$$

Open code

- $\log(x)$ is the natural logarithm
-

We note that:

1.05/((((((-1)^0.955 * (4*0.955+1)*((1/2)^3)/((0.955!)^3)))))

Input:

$$\frac{1.05}{(-1)^{0.955}\,(4\times 0.955+1)\times\frac{\left(\frac{1}{2}\right)^3}{(0.955!)^3}}$$

Open code

- $n!$ is the factorial function

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Result:

- More digits

$-1.63286\ldots - 0.232390\ldots i$

Polar coordinates:

$r = 1.64931$ (radius), $\theta = -171.9°$ (angle)

Open code

$$1.64931 \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 \ldots$$

Series representation:

$$\frac{1.05}{\frac{(-1)^{0.955}\,(4\times 0.955+1)\left(\frac{1}{2}\right)^3}{(0.955!)^3}} = (-1.72535 - 0.245554\,i)\left(\sum_{k=0}^{\infty}\frac{(0.955-n_0)^k\,\Gamma^{(k)}(1+n_0)}{k!}\right)^3$$

for $((n_0 \notin \mathbb{Z} \text{ or } n_0 \geq 0) \text{ and } n_0 \to 0.955)$

Open code

- $\mathbb{Z}$ is the set of integers
  - More information

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Integral representations:

$$\frac{1.05}{\frac{(-1)^{0.955}\,(4\times 0.955+1)\left(\frac{1}{2}\right)^3}{(0.955!)^3}} = (-1.72535 - 0.245554\,i)\left(\int_0^1 \log^{0.955}\left(\frac{1}{t}\right)dt\right)^3$$

Open code

$$\frac{1.05}{\frac{((-1)^{0.955}(4\times 0.955+1))\left(\frac{1}{2}\right)^3}{(0.955!)^3}} =$$

$$(-1.72535-0.245554\, i)\left(\int_1^\infty e^{-t}\, t^{0.955}\, dt + \sum_{k=0}^{\infty} \frac{(-1)^k}{(1.955+k)\, k!}\right)^3$$

Open code

- $\log(x)$ is the natural logarithm
-

Now, we have that:

$$\frac{29241}{\pi} = \sum_{k=0}^{\infty} \{(76160 - 455\sqrt{7})k + 784\sqrt{7} + 6728\} B_k \left(\frac{8\sqrt{2}(325+119\sqrt{7})}{29241}\right)^{2k}, \quad (9.4)$$

29241 / π = 9.307,69

For k = 1 and B_k = (3/32)/(0.051705), we obtain:

((((76160-455sqrt(7))+784sqrt(7)+6728)))*3/32/0.051705 * ((((8sqrt(2)*(325+119sqrt(7))))/((29241)))^2

Input:

$$\left(\left(76160-455\sqrt{7}\right)+784\sqrt{7}+6728\right)\times\frac{\frac{3}{32}}{0.051705}\left(\frac{8\sqrt{2}\left(325+119\sqrt{7}\right)}{29241}\right)^2$$

Open code

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Result:

- More digits

9307.68...

9307.68.... result very near to the rest mass of Bottom eta meson 9300

Note that:

((((((((((76160-455sqrt(7))+784sqrt(7)+6728)))*3/32/0.051705 * ((((8sqrt(2)*(325+119sqrt(7))))/((29241)))^2))))))^1/19

Input:

$$\sqrt[19]{\left(\left(76160-455\sqrt{7}\right)+784\sqrt{7}+6728\right)\times\frac{\frac{3}{32}}{0.051705}\left(\frac{8\sqrt{2}\,(325+119\sqrt{7})}{29241}\right)^2}$$

Open code

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Result:

- More digits

1.617657...

1.617657...

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Appendix A

From:

http://pdg.lbl.gov/

http://pdg.lbl.gov/2018/listings/rpp2018-list-f0-1710.pdf

$f_0(1710)$

$I^G(J^{PC}) = 0^+(0^{++})$

See our mini-review in the 2004 edition of this *Review*, Physics Letters **B592** 1 (2004). See also the mini-review on scalar mesons under $f_0(500)$ (see the index for the page number).

$f_0(1710)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1723^{+6}_{-5} OUR AVERAGE		Error includes scale factor of 1.6. See the ideogram below.		
$1759 \pm 6\,^{+14}_{-25}$	5.5k	[1] ABLIKIM 13N	BES3	$e^+e^- \to J/\psi \to \gamma\eta\eta$
$1750^{+6}_{-7}\,^{+29}_{-18}$		UEHARA 13	BELL	$\gamma\gamma \to K^0_S K^0_S$
$1701 \pm 5\,^{+9}_{-2}$	4k	[2] CHEKANOV 08	ZEUS	$ep \to K^0_S K^0_S X$
$1765^{+4}_{-3} \pm 13$		ABLIKIM 06V	BES2	$e^+e^- \to J/\psi \to \gamma\pi^+\pi^-$
$1760 \pm 15\,^{+15}_{-10}$		[3] ABLIKIM 05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$
1738 ± 30		ABLIKIM 04E	BES2	$J/\psi \to \omega K^+K^-$
$1740 \pm 4\,^{+10}_{-25}$		[4] BAI 03G	BES	$J/\psi \to \gamma K\overline{K}$
1740^{+30}_{-25}		[4] BAI 00A	BES	$J/\psi \to \gamma(\pi^+\pi^-\pi^+\pi^-)$
1698 ± 18		[5] BARBERIS 00E		$450\ pp \to p_f \eta\eta p_s$
$1710 \pm 12 \pm 11$		[6] BARBERIS 99D	OMEG	$450\ pp \to K^+K^-, \pi^+\pi^-$
1710 ± 25		[7] FRENCH 99		$300\ pp \to p_f (K^+K^-) p_s$
1707 ± 10		[8] AUGUSTIN 88	DM2	$J/\psi \to \gamma K^+K^-, K^0_S K^0_S$
1698 ± 15		[8] AUGUSTIN 87	DM2	$J/\psi \to \gamma\pi^+\pi^-$
$1720 \pm 10 \pm 10$		[9] BALTRUSAIT...87	MRK3	$J/\psi \to \gamma K^+K^-$
1742 ± 15		[8] WILLIAMS 84	MPSF	$200\ \pi^- N \to 2K^0_S X$
1670 ± 50		BLOOM 83	CBAL	$J/\psi \to \gamma 2\eta$

The candidate "glueball", the scalar meson $f_0(1710)$, have a mass of 1723 ± 5; 1723 ± 6; 1760 ± 15 MeV

From:

http://cms-results.web.cern.ch/cms-results/public-results/publications/SUS-17-006/index.html

Search for physics beyond the standard model in events with high-momentum Higgs bosons and missing transverse momentum in proton-proton collisions at 13 TeV

CMS Collaboration

22 December 2017

Phys. Rev. Lett. 120 (2018) 241801

Abstract:

A search for physics beyond the standard model in events with one or more high-momentum Higgs bosons, H, decaying to pairs of b quarks in association with missing transverse momentum is presented. The data, corresponding to an integrated luminosity of 35.9 fb−1−1, were collected with the CMS detector at the LHC in proton-proton collisions at the center-of-mass energy *s*√=s= 13 TeV. The analysis utilizes a new b quark tagging technique based on jet substructure to identify jets from H→bb¯H→bb¯. Events are categorized by the multiplicity of H-tagged jets, jet mass, and the missing transverse momentum. No significant deviation from standard model expectations is observed. In the context of supersymmetry (SUSY), limits on the cross sections of pair-produced gluinos are set, assuming that gluinos decay to quark pairs, H (or Z), and the lightest SUSY particle, LSP, through an intermediate next-to-lightest SUSY particle, NLSP. With large mass splitting between the NLSP and LSP, and 100% NLSP branching fraction to H, **the lower limit on the gluino mass is found to be 2010 GeV.**

From:

Upper Bound on the Gluino Mass in Supersymmetric Models with Extra Matters

Takeo Moroi(a;b), Tsutomu T. Yanagida(b) and Norimi Yokozaki

arXiv:1606.04053v2 [hep-ph] 3 Aug 2016

Table 1: Mass spectra in sample points. We take $A_0 = 0$ and $M_{\rm inp} = 10^{16}$ GeV. Here, A_t shown in the table is the generated A-term at $m_{\mathcal{S}}$.

Parameters	Point I	Point II	Point III	Point IV	Point V
N_5	3	3	4	4	3
M_3 (GeV)	3000	3540	6900	6300	3400
M_1/M_3	1	1.0	0.83	1	0.7
M_2/M_3	1	0.61	0.62	1	1
m_0 (GeV)	0	0	0	4000	0
$m_{H_{u,d}}/1$ TeV	3.441	0	0	6.392	0
$\tan\beta$	10	25	6	5	32.9
μ (GeV)	229	3410	5270	194	3210
A_t (GeV)	−4030	−4450	−7050	−6720	−4480
Particles	Mass (GeV)	Mass (GeV)	Mass (GeV)	Mass (GeV)	Mass (GeV)
$\tilde{g}$	2470	2970	1890	1760	2840
$\tilde{q}$	3670–3890	4340–4400	5360–5370	5900–6070	4150–4410
$\tilde{t}_{2,1}$	3220, 2130	3780, 3250	4390, 3130	4760, 2560	3720, 2940
$\tilde{\chi}^{\pm}_{2,1}$	942, 232	3410, 669	5240, 537	884, 196	3210, 1110
$\tilde{\chi}^0_4$	942	3410	5240	884	3210
$\tilde{\chi}^0_3$	537	3410	5240	590	3210
$\tilde{\chi}^0_2$	238	669	537	203	1110
$\tilde{\chi}^0_1$	227	645	510	191	420
$\tilde{e}_{L,R}(\tilde{\mu}_{L,R})$	1510, 911	1140, 1080	1630, 1420	4580, 4260	1700, 715
$\tilde{\tau}_{2,1}$	1500, 860	1150, 983	1630, 1420	4580, 4250	1650, 423
$H^{\pm}$	3730	3290	5590	6910	3040
$h_{\text{SM-like}}$	125.2	125.2	126.3	125.6	125.2

From:

Citation: M. Tanabashi *et al.* (Particle Data Group), Phys. Rev. D **98**, 030001 (2018)

Supersymmetric Particle Searches

CONTENTS:

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From Wikipedia:

In supersymmetry theories of particle physics, a **gaugino** is the hypothetical fermionic supersymmetric field quantum (superpartner) of a gauge field, as predicted by gauge theory combined with supersymmetry. All gauginos have spin 1/2, except for gravitino (spin 3/2).

In the minimal supersymmetric extension of the standard model the following gauginos exist:

- The gluino (symbol $\tilde{g}$) is the superpartner of the gluon, and hence carries color charge.
- The gravitino (symbol $\tilde{G}$) is the supersymmetric partner of the graviton.
- Three **winos** (symbol $\tilde{W}^{\pm}$ and $\tilde{W}^{3}$) are the superpartners of the W bosons of the $SU(2)_L$ gauge fields.
- The **bino** is the superpartner of the U(1) gauge field corresponding to weak hypercharge.

Sometimes the term "electroweakinos" is used to refer to winos and binos and on occasion also higgsinos.[1]

For the gluino we have the following values:

mass spectra in sample points : 2470, 2970, 1890, 1760, 2840
(spettri di massa in punti campione **anno 2016**)

From:

ATLAS NOTE - ATLAS-CONF-2015-067
13th December 2015

For the Gbb model, gluinos with masses below approximately 1780 GeV are excluded at 95% CL for LSP masses below 800 GeV. At high gluino masses, the exclusions limit are driven by SR-Gbb-A and SR-Gbb-B. The best exclusion limit on the LSP mass is ≈ 925 GeV, which is reached for a range of gluino masses between approximately 1200 GeV to 1600 GeV. The exclusion limit is dominated by SR-Gbb-C for high LSP masses. For the Gtt model, gluino masses up to 1710 GeV are excluded for massless LSP. For LSP masses below 700 GeV, gluino masses below approximately 1675 GeV are excluded. The LSP exclusion extends up to approximately 900 GeV, corresponding to a gluino mass of approximately 1450 GeV–1600 GeV. The exclusions limit is driven by SR-Gtt-1L-B for all Gtt model points. The ATLAS exclusion limits obtained with the full $\sqrt{s} = 8$ TeV dataset are also shown in Fig. 5. The current results largely improve on the $\sqrt{s} = 8$ TeV limits despite the lower integrated luminosity. For instance the exclusion limit on the gluino mass is extended by approximately 500 GeV and 300 GeV for the Gbb and Gtt models for massless LSP, respectively. This improvement is primarily attributable to the increased center-of-mass energy of the LHC. The addition of the IBL pixel layer in Run 2, which improves the capability for ATLAS to tag b-jets [31], also benefits particularly this analysis which employs a dataset requiring at least three b-tagged jets. The sensitivity of the data analysis has also been improved with respect to the $\sqrt{s} = 8$ TeV analysis [18] by using top-tagged large-R jets, lepton isolation adapted to a busy environment and the $m_{T,min}^{b-jets}$ variable.

For the Gbb model**, gluinos with masses below approximately 1780 GeV are excluded at 95%** CL for Large Splitting masses below 800 GeV.

The Large Mass Splitting exclusion extends up to approximately 900 GeV, corresponding to a **gluino mass of approximately 1450 GeV–1600 GeV**.

Thence, we have the following values for the hypothetical gluino mass:

1450-1600 GeV; > 1780 GeV; 1760-1890-2470-**2840-2970** GeV; 2010 GeV

Thence from a minimum of 1450 to a maximum of 2970 GeV. If we calculate averages less 2840 and 2970, we get:

Mean 1: 1450-1600-1780 = 1610 GeV

Mean 2: 1760-1890-2470 = **2040 GeV**

Mean 3: 1610-2010-2040 = 1886 GeV

Mean 4: 1450-2470 = 1960 GeV

Mean 5: 1450-1600 = **1525 GeV**

Mean 6: 1525-2040 = 1782.5 GeV

Mean 7: 1525-1960 = 1742.5 GeV

Mean 8: 1525-1886 = 1705.5 GeV

Mean 9: 1610-1886 = 1748 GeV

Mean 10: 1610-1960 = 1785 GeV

Mean 11: 1610-2040 = 1825 GeV

Mean 12: 1782,5-1742,5-1705,5-1748-1785-1825 = 1764.75 GeV

Mean 13: 2040-1825-1782,5-1610-1705,5-1748 = 1785.16 GeV

OUR AVERAGE hypothetical gluino mass **= 1785.16 GeV practically about 10^3 times greater than the upper bound mass value of candidate "glueball", the scalar meson f_0(1710), that have a mass including between 1723 ± 5; 1723 ± 6 and 1760 ± 15 MeV**

Our Range: 1525-1785.16 GeV