On a Ramanujan expression: mathematical connections with ϕ and various formulas concerning Modified Gravity Theory

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Abstract

In this paper we have described a Ramanujan formula and obtained some mathematical connections with ϕ and various equations concerning Modified Gravity Theory

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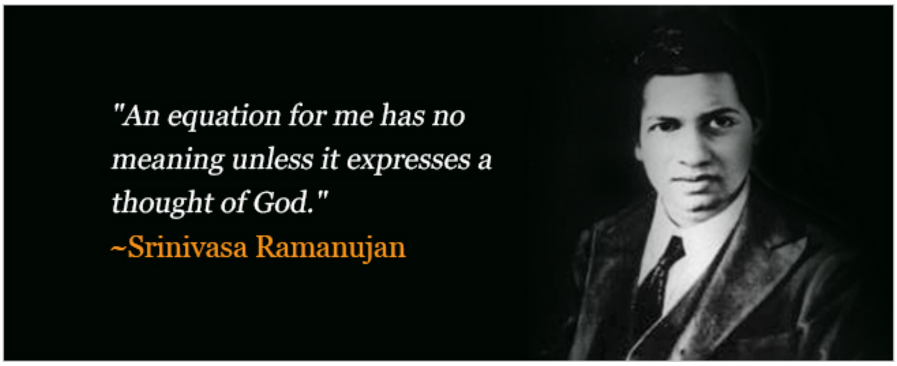

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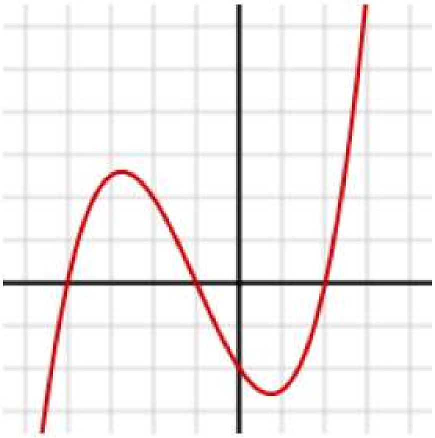

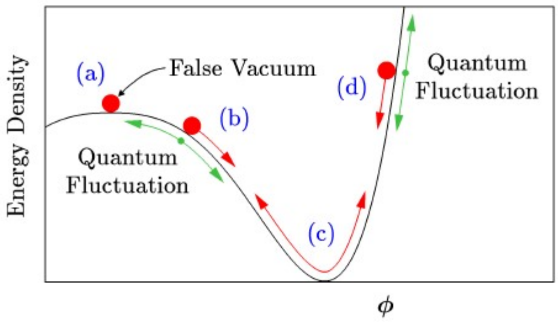

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V. Dobrev (ed.), *Lie Theory and Its Applications in Physics: IX International Workshop*, Springer Proceedings in Mathematics & Statistics 36,
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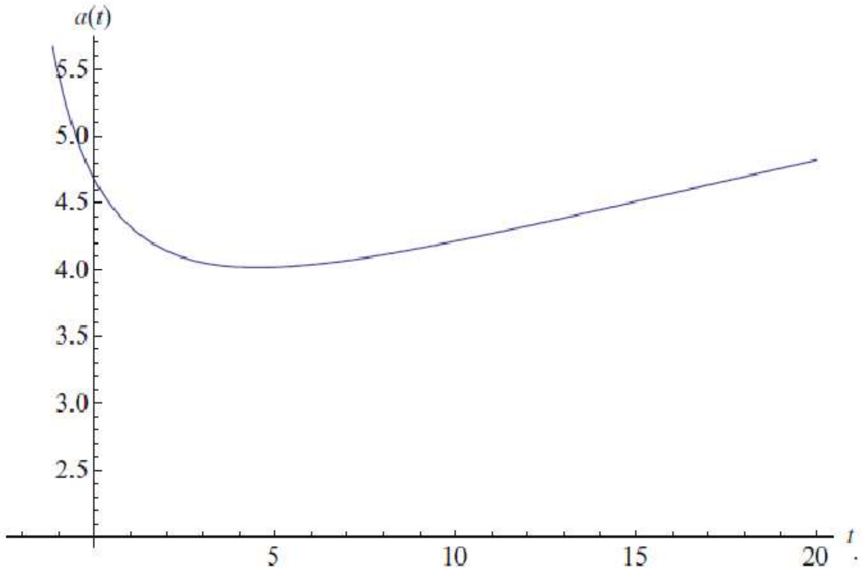


Fig. 2 Scale factor $a(t)$ given by (27) for $d_1 = \frac{8}{\sqrt{3}}$, $d_2 = 2$ and $d_3 = \frac{1}{10}$

The corresponding acceleration is

$$\ddot{a}(t) = \frac{d_3 e^{-\frac{8}{\sqrt{3}(d_1+t)}}}{12(d_1+t)^{7/2}\left(32 d_2 e^{\frac{32}{\sqrt{3}(d_1+t)}}+\sqrt{3}\right)^{3/2}}\left(1024 d_2^2 e^{\frac{64}{\sqrt{3}(d_1+t)}}\right.$$

$$\times\left(-6d_1t-3d_1^2+32\sqrt{3}d_1-3t^2+32\sqrt{3}t+256\right)$$

$$-3\left(6d_1t+3d_1^2+32\sqrt{3}d_1+3t^2+32\sqrt{3}t-256\right)$$

$$\left.-192\sqrt{3}d_2 e^{\frac{32}{\sqrt{3}(d_1+t)}}(d_1+t-16)(d_1+t+16)\right). \quad (28)$$

1/10 * exp(-8/((sqrt3(8/(sqrt3)+18))))* 1/ [12*(8/(sqrt3)+18)^3.5* (((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))^1.5]

Input:

$$\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\times\frac{1}{12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}}$$

Result:

$6.956253571183296511772217066387012081659981027004533 2\ldots \times 10^{-11}$

6.956253571…*10^-11

1024*4*exp(64/((sqrt3(8/(sqrt3)+18))))

Input:

$$1024\times 4\exp\left(\frac{64}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)$$

Exact result:

$$4096\, e^{64/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}$$

Decimal approximation:

20981.18343683979045480787547562893008691307361902553865861...

20981.18343683979…

(((-6*(8/sqrt3)18-3*(8/sqrt3)^2+32sqrt3*(8/sqrt3)-3*18^2+32(sqrt3)*18+256)))-3(((6*(8/sqrt3)18+3*(8/sqrt3)^2+32sqrt3*(8/sqrt3)+3*18^2+32(sqrt3)*18-256)))

Input:

$$\left(-6\times\frac{8}{\sqrt{3}}\times 18-3\left(\frac{8}{\sqrt{3}}\right)^2+32\sqrt{3}\times\frac{8}{\sqrt{3}}-3\times 18^2+32\sqrt{3}\times 18+256\right)-$$
$$3\left(6\times\frac{8}{\sqrt{3}}\times 18+3\left(\frac{8}{\sqrt{3}}\right)^2+32\sqrt{3}\times\frac{8}{\sqrt{3}}+3\times 18^2+32\sqrt{3}\times 18-256\right)$$

Result:

$$-524+288\sqrt{3}-3\left(1036+864\sqrt{3}\right)$$

Decimal approximation:

-7622.645060638693284287236370829529933436223304779116967 04...

-7622.64506063869…

-192(sqrt3)*2*exp(32/((sqrt3(8/(sqrt3)+18))))((8/sqrt3)+18-16)((8/sqrt3)+18+16)

Input:

$$-192\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\left(\frac{8}{\sqrt{3}}+18-16\right)\left(\frac{8}{\sqrt{3}}+18+16\right)$$

Exact result:

$$-384\sqrt{3}\left(2+\frac{8}{\sqrt{3}}\right)\left(34+\frac{8}{\sqrt{3}}\right)e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}$$

Decimal approximation:

-384773.4228562793715162526416765698449774350754487159263 68...

-384773.422856279.....

Thence:

1/10 * exp(-8/((sqrt3(8/(sqrt3)+18))))* 1/ [12*(8/(sqrt3)+18)^3.5* (((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))^1.5] ((((20981.18343683979 * (-7622.64506063869)-384773.422856279))))

Input interpretation:

$$\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\times\frac{1}{12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}}$$
$$(20\,981.18343683979\times(-7622.64506063869)-384\,773.422856279)$$

Result:

−0.01115204922681764205077389538734887992940116811645517292...

-0.01115204922…

Series representations:

$$\left(\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.183436839790000\,(-7622.645060638690000)-384\,773.4228562790000)\right)\Big/\left(10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)\right)=$$
$$-\frac{1.335974064283644986\times 10^{6}\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)}{\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}}$$

$$\left(\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.183436839790000\,(-7622.645060638690000)-384\,773.4228562790000)\right)\Big/$$

$$\left(10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)\right)=$$

$$-\left(\left(1.335974064283644986\times 10^{6}\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}\right)^{1.5}\right)\right)$$

$$\left(\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.183436839790000\,(-7622.645060638690000)-384\,773.4228562790000)\right)\Big/$$

$$\left(10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)\right)=$$

$$-\left(\left(1.335974064283644986\times 10^{6}\exp\left(-\frac{8\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)\right)\Big/\right.$$

$$\left(\left(18+\frac{16\sqrt{\pi}}{\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)^{3.5}\left(64\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)+\frac{\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}{2\sqrt{\pi}}\right)^{1.5}\right)\right)$$

We have that:

89+[(1/10 * exp(-8/((sqrt3(8/(sqrt3)+18))))* 1/ [12*(8/(sqrt3)+18)^3.5* (((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))^1.5] ((((20981.183436* (-7622.645)-384773.422)))))]^-(sqrt3)

Input interpretation:

$$89+\left(\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\times\frac{1}{12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}}\right.$$
$$\left.(20\,981.183436\times(-7622.645)-384\,773.422)\right)^{-\sqrt{3}}$$

Result:

1694.61... +
1797.73... i

Polar coordinates:

$r = 2470.53$ (radius), $\theta = 46.6912°$ (angle)

2470.53 result practically equal to the rest mass of charmed Xi baryon 2470.88

Series representations:

$$89+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-\sqrt{3}}=$$

$$e^{-14.1052\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{-\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}$$

$$\left(1+89\,e^{14.1052\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}\right)$$

$$89+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-\sqrt{3}} =$$

$$1.33597\times 10^{6^{-\sqrt{2}\,\sum_{k=0}^{\infty}\left(\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k\right)/k!}}$$

$$\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)\right)\right)^{-\sqrt{2}\,\sum_{k=0}^{\infty}\left(\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k\right)/k!}$$

$$\left(1+89\times 1.33597\times 10^{6^{\sqrt{2}\,\sum_{k=0}^{\infty}\left(\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k\right)/k!}}\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)\right)\right)^{\sqrt{2}\,\sum_{k=0}^{\infty}\left(\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k\right)/k!}\right)$$

$$89+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-\sqrt{3}}=$$

$$1.33597\times 10^{6^{-\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}}\left(-\left(\exp\left(-\frac{8}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{-\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}$$

$$\Bigg/\left(1+89\times 1.33597\times 10^{6^{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}}\left(-\left(\exp\left(-\frac{8}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{1/2}{k}}\right)$$

And:

34+5+[(1/10 * exp(-8/((sqrt3(8/(sqrt3)+18))))* 1/ [12*(8/(sqrt3)+18)^3.5* (((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))^1.5] ((((20981.183436* (-7622.645)-384773.422)))))]^-(1.65578)

Input interpretation:

$$34+5+\left(1\Big/\left(\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\times\frac{1}{12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}}\right.\right.$$
$$\left.\left.(20\,981.183436\times(-7622.645)-384\,773.422)\right)\right)^{1.65578}$$

Result:

843.148... +
1509.81... i

Polar coordinates:

$r = 1729.29$ (radius), $\theta = 60.819°$ (angle)

1729.29

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

Series representations:

$$34+5+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-1.65578} =$$

$$\left(39\left(1.84485\times 10^{-12}+\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{1.65578}\right)\right)\Big/$$

$$\left(\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Big/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{1.65578}\right)$$

$$34+5+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-1.65578} =$$

$$\left(39\left(1.84485\times 10^{-12}+\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\middle/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)\right)\right)^{1.65578}\right)\right)\Bigg/$$

$$\left(-\left(\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\middle/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)\right)\right)^{1.65578}$$

$$34+5+\left(\frac{\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)^{-1.65578}=$$

$$\left(39\left(1.84485\times 10^{-12}+\left(\left(-\left(\exp\left(-\frac{8}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Bigg/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{1.65578}\right)\right)\Bigg/$$
$$\left(\left(-\left(\exp\left(-\frac{8}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\right)\Bigg/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)^{1.65578}\right)$$

Furthermore, we have also:

-(((-5/10^3-1+55((([(1/10 * exp(-8/((sqrt3(8/(sqrt3)+18))))* 1/
[12*(8/(sqrt3)+18)^3.5* (((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))^1.5]
((((20981.183436* (-7622.645)-384773.422)))))])))))

Input interpretation:

$$-\left(-\frac{5}{10^3}-1+55\left(\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\times \frac{1}{12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}} (20\,981.183436\times(-7622.645)-384\,773.422)\right)\right)$$

Result:

1.618362702579569133986014903353866871910051575883961925171...

1.61836270257…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$-\left(-\frac{5}{10^3}-1+\frac{55\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)=$$

$$\left(1.005\left(7.3113\times10^7\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)\Bigg/$$

$$\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)$$

$$-\left(-\frac{5}{10^3}-1+\frac{55\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)=$$

$$\left(1.005\left(7.3113\times 10^7\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\right.\right.$$

$$\left.\left.\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)\right)\Big/$$

$$\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)^{3.5}\right.$$

$$\left.\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{1.5}\right)$$

$$
-\left(-\frac{5}{10^{3}}-1+\frac{55\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)(20\,981.1834360000\,(-7622.65)-384\,773.)}{10\left(12\left(\frac{8}{\sqrt{3}}+18\right)^{3.5}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)^{1.5}\right)}\right)=
$$

$$
\left(1.005\left(7.3113\times 10^{7}\exp\left(-\frac{8}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.\right.
$$

$$
\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}
$$

$$
\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.
$$

$$
\left.\left.\left.\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)\right)\Bigg/\left(\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)^{3.5}\right.
$$

$$
\left.\left(64\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{1.5}\right)
$$

Now, from

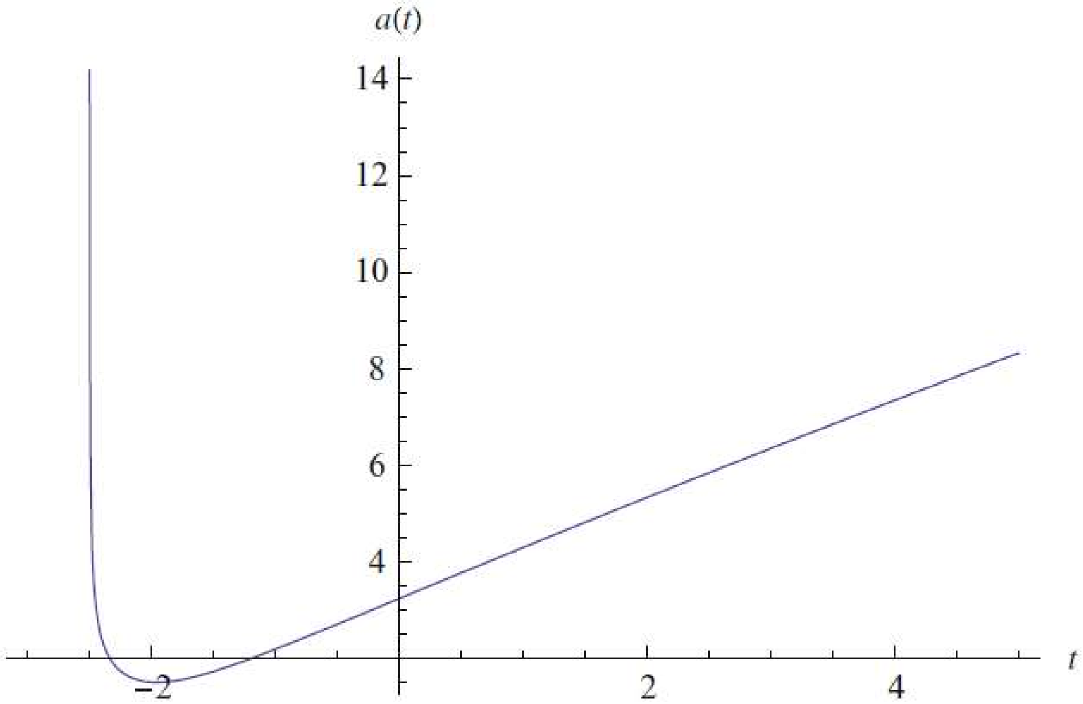


Fig. 1 Scale factor $a(t)$ given by (23) for $d_1 = -2.5$, $d_2 = 2$ and $d_3 = 1$

$$a(t) - d_3 (t - d_1)^{\frac{3-\sqrt{57}}{12}} \sqrt{d_2 (t - d_1)^{\sqrt{\frac{19}{3}}} + 1},$$

For t = 4, we obtain:

(4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2

Input:

$$(4 - 2.5)^{1/12(3-\sqrt{57})} \sqrt{2 (4 - 2.5)^{\sqrt{19/3}} + 1}$$

Result:

2.194363987038479061586011576211433843981186653463243691689...

2.194363987.....

And:

$$H(t)=\frac{\left(3+\sqrt{57}\right) d_2 (t-d_1)^{\sqrt{\frac{19}{3}}}-\sqrt{57}+3}{12 (t-d_1)\left(d_2 (t-d_1)^{\sqrt{\frac{19}{3}}}+1\right)},$$

[(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1))))

Input:

$$\frac{(3+\sqrt{57})\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}$$

Result:

0.4580026676128394369772623020203430878148669059135273702 72...

0.4580026676128....

Note that subtracting the two results, we obtain:

((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) - ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))))))

Input:

$$(4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}-\frac{(3+\sqrt{57})\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}$$

Result:

1.73636...

1.73636…

From which:

((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) - ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))))))-4/10^3

Input:

$$(4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}-\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}-\frac{4}{10^3}$$

Result:

1.73236...

1.73236... ≈ $\sqrt{3}$ that is the ratio between the gravitating mass M_0 and the Wheelerian mass q

$$M_0=\sqrt{3q^2-\Sigma^2},$$
$$q=\frac{\left(3\sqrt{3}\right)M_s}{2}.$$

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

and:

((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) - ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))))))-(89+21+8)/10^3

Input:

$$(4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}-\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}-\frac{89+21+8}{10^3}$$

Result:

1.618361319425639624608749274191090756166319747549716321416...

1.61836131942… result that is a very good approximation to the value of the golden ratio 1.618033988749...

Or, summing the two results:

((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) + ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1))))))

Input:

$$(4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}+\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}$$

Result:

2.652366654651318498563273878231776931796053559376771061962...

2.6523666546…

From which:

sqrt[((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) + ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))))))]-(7+3)/10^3

Input:

$$\sqrt{(4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}+\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}}-\frac{7+3}{10^3}$$

Result:

1.618608809582988378402968109230844335578328782323654431563...

1.61860880958.... result that is a very good approximation to the value of the golden ratio 1.618033988749...

Multiplying the two result and performing the 6th root, we obtain:

1/ [((((4-2.5)^((3-sqrt57)/12)* (2(4-2.5)^(sqrt(19/3))+1)^1/2))) * ((([(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) – sqrt57 + 3] / ((12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))))))]^1/6

Input:

$$\frac{1}{\sqrt[6]{\left((4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}\right)\times\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}}}$$

Result:

0.999165018990534141576264460615615460756187336897174093330...

0.9991650189905…. result very near to the value of the following Rogers-Ramanujan continued fraction:

$$\frac{e^{-\frac{\pi}{\sqrt{5}}}}{\frac{\sqrt{5}}{1+\sqrt[5]{\sqrt{\varphi^5\sqrt[4]{5^3}}-1}}-\varphi+1}=1-\frac{e^{-\pi\sqrt{5}}}{1+\frac{e^{-2\pi\sqrt{5}}}{1+\frac{e^{-3\pi\sqrt{5}}}{1+\frac{e^{-4\pi\sqrt{5}}}{1+\dots}}}}\approx 0.9991104684$$

From which:

((log base 0.99937369885[1/ [(((4-2.5)^((3-sqrt57)/12)(2(4-2.5)^(sqrt(19/3))+1)^1/2))[(3+sqrt57) (2(4-2.5)^(sqrt(19/3))) - sqrt57+3]/(12(4-2.5) ((2(4-2.5)^(sqrt(19/3))+1)))]]^2))^2

Input interpretation:

$$\log^2_{0.99937369885}\left(\frac{1}{\left((4-2.5)^{1/12\left(3-\sqrt{57}\right)}\sqrt{2\,(4-2.5)^{\sqrt{19/3}}+1}\right)\times\frac{\left(3+\sqrt{57}\right)\left(2\,(4-2.5)^{\sqrt{19/3}}\right)-\sqrt{57}+3}{12\,(4-2.5)\left(2\,(4-2.5)^{\sqrt{19/3}}+1\right)}}\right)^2$$

$\log_b(x)$ is the base- b logarithm

Result:

4096.00...

4096 = 64^2

Now, we have that:

$$H(t)=\frac{-512\sqrt{3}d_2e^{\frac{32}{\sqrt{3}(d_1+t)}}+3(t+d_1)\left(32d_2e^{\frac{32}{\sqrt{3}(d_1+t)}}+\sqrt{3}\right)+48}{6\,(d_1+t)^2\left(32d_2e^{\frac{32}{\sqrt{3}(d_1+t)}}+\sqrt{3}\right)}$$

-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*(((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))+48 * 1 / 6((8/sqrt3)+18)^2*(((((32*2*exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))

-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48

Input:

$$-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48$$

Exact result:

$$48-1024\sqrt{3}\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}+3\left(18+\frac{8}{\sqrt{3}}\right)\left(\sqrt{3}+64\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\right)$$

Decimal approximation:

5980.283283784519189849924581243413639286722947563159002906...

5980.2832837845…

Property:

$$48-1024\sqrt{3}\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}+3\left(18+\frac{8}{\sqrt{3}}\right)\left(\sqrt{3}+64\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\right)$$

is a transcendental number

6((8/sqrt3)+18)^2*(((((32*2*exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))

Input:

$$6\left(\frac{8}{\sqrt{3}}+18\right)^2\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)$$

Exact result:

$$6\left(18+\frac{8}{\sqrt{3}}\right)^2\left(\sqrt{3}+64\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\right)$$

Decimal approximation:

449953.650803824797176391209191268121695251790511634786552 5...

449953.6508038…

Property:

$$6\left(18+\frac{8}{\sqrt{3}}\right)^2\left(\sqrt{3}+64\,e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\right)$$ is a transcendental number

Thence:

(((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.65080382479717639

Input interpretation:

$$\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449\,953.65080382479717639}$$

Result:

0.013290887346065476665440...

0.0132908873…

Series representations:

$$\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449\,953.650803824797176390000} =$$

$$-\frac{1}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}} 0.00227578995785602272303006 6 \left(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-0.0703125000000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-3.375000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000000\sqrt{2}^2\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^2+1.000000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^2\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^2\right)$$

$$\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449\,953.650803824797176390000}=$$

$$-\Bigg(\Bigg(0.00227578995785602272303006 6$$

$$\left(-1.5000000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\right.$$

$$0.0703125000000000000000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$3.375000000000000000000000$$

$$\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$0.0527343750000000000000000\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+$$

$$1.0000000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)$$

$$\left.\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\Bigg)\Bigg/\left(\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\Bigg)$$

$$\frac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449\,953.650803824797176390000} =$$

$$-\frac{1}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\,0.00227578995785602272303006663$$

$$\left(-1.50000000000000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.0703125000000000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.37500000000000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.0527343750000000000000000000\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^2+$$

$$1.00000000000000000000000000$$

$$\left.\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^2\right)$$

From which:

123/((1/[(((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[(((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.65080382479717639]))-(13+3)/10^3

Input interpretation:

$$123/1/\left(\left(\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449953.65080382479717639}\right)-\frac{13+3}{10^3}$$

Result:

1.618779143566053629849 1...

1.6187791435…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$\frac{123}{\frac{1}{\frac{-512\sqrt{3}\,2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}} - \frac{13+3}{10^3} =$$

$$-\frac{1}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\,0.2799221648162907949326982$$

$$\left(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.01315375370886371987088542\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.375000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}$$

$$\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.05273437500000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.000000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)$$

$$\frac{123}{\frac{\frac{1}{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}{449953.65080382479717639000}} - \frac{13+3}{10^3} =$$

$$-\Bigg(\Bigg(0.27992216481629079493269\,82$$

$$\left(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\right.$$

$$0.01315375370886371987088542\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$3.375000000000000000000000$$

$$\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$0.05273437500000000000000000\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+$$

$$1.000000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)$$

$$\left.\sqrt{2}^{\,2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\Bigg)\Bigg/\left(\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\Bigg)$$

$$\frac{\frac{123}{\frac{1}{\frac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}}}{}-\frac{13+3}{10^3}=$$

$$\Bigg(0.839766494448872384798094\Bigg(1.000000000000000000000000\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)\sqrt{\pi}^{2}+$$

$$0.00438458456962123995696181\sqrt{\pi}\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)+$$

$$1.125000000000000000000000\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)\sqrt{\pi}\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)+0.00878906250000000000000000$$

$$\left(\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)^{2}-0.166666666666666666666667\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)$$

$$\left(\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j}2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)^{2}\Bigg)\Bigg)\Bigg/$$

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

Or:

(((449953.6508038 *1/((((((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48)))))))))^1/9+2/10^3

Input interpretation:

$$\left(449\,953.6508038\times 1\Big/\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\right)\hat{}\,(1/9)+\frac{2}{10^3}$$

Result:

1.6181959069212...

1.6181959069212…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$\sqrt[9]{\frac{449\,953.65080380000}{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}+\frac{2}{10^3}=3.93261993176866154\left(0.000508566816702400059+1.00000000000000000\left(-\left(\left(\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\Big/\left(-9\sqrt{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\left(4+3\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)+64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\left(-12-27\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}+8\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^2\right)\right)\right)\right)\hat{}\,(1/9)\right)$$

$$\sqrt[9]{\frac{449953.65080380000}{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}+$$

$$\frac{2}{10^3}=3.93261993176866154$$

$$\left(0.00050856681670240059+1.0000000000000000\left(-\left(\left(\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\Big/\right.\right.\right.$$

$$\left(-9\sqrt{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\left(4+3\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)+\right.$$

$$64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)$$

$$\left(-12-27\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}+8\sqrt{2}^2\right.$$

$$\left.\left.\left.\left.\left.\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\right)\right)\right)\right)\wedge(1/9)\right)$$

$$\sqrt[9]{\frac{449953.65080380000}{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}+\frac{2}{10^3}} = 3.9326199317686615$$

$$\left(0.00050856681670240059 + 1.0000000000000000\left(-\left(\left(\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\Big/\left(-768\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right) - 36\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k} - 1728\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k} - 27\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2} + 512\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)\right)\right)\text{^}(1/9)$$

2/[(((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.65080382479717639]-11

Input interpretation:

$$2 \Big/ \left(\left(-512\sqrt{3} \times 2 \exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}} + 18\right)} \right) + 3\left(18 + \frac{8}{\sqrt{3}}\right)\left(32 \times 2 \exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}} + 18\right)} \right) + \sqrt{3}\right) + 48 \right) \times \frac{1}{449\,953.65080382479717639} \right) - 11$$

Result:

139.47904236371872518672...

139.4790423…. result practically equal to the rest mass of Pion meson 139.57 MeV

Series representations:

$$
\frac{2}{\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}-11=
$$

$$
-\Bigg(\Bigg(11.0000000000000000000000
$$

$$
\left(-1.5000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.
$$

$$
79.8220260660200279077397\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-
$$

$$
3.3750000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)
$$

$$
\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000
$$

$$
\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+1.0000000000000000000000
$$

$$
\left.\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)\Big/
$$

$$
\left(-1.5000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.
$$

$$
0.0703125000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-
$$

$$
3.3750000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}
$$

$$
\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+
$$

$$
1.0000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)
$$

$$
\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)
$$

$$
\frac{2}{\frac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}-11=
$$

$$
\begin{aligned}
-\Bigg(\Bigg(\Bigg(&11.000000000000000000000000 \\
&\left(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\right. \\
&79.822026066020027907739 7\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}- \\
&3.375000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right) \\
&\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-0.052734375000000000000000 \\
&\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+1.000000000000000000000000 \\
&\left.\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\Bigg)\Bigg/ \\
&\left(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\right. \\
&0.070312500000000000000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}- \\
&3.375000000000000000000000 \\
&\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}- \\
&0.052734375000000000000000\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+ \\
&1.000000000000000000000000 \\
&\left.\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\Bigg)
\end{aligned}
$$

$$\frac{2}{\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}-11=$$

$$-\left(\left(11.0000000000000000000000000\left(-1.50000000000000000000000000\right.\right.\right.$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+$$

$$79.8220260660200279077397O2\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.37500000000000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.0527343750000000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.00000000000000000000000000\exp\left(\right.$$

$$\left.\left.\left.\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)\bigg/$$

$$\left(-1.50000000000000000000000000\right.$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-$$

$$0.0703125000000000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.37500000000000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.0527343750000000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.00000000000000000000000000$$

$$\left.\left.\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)$$

2/[(((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.65080382479717639]-18-7

Input interpretation:

$$2 \Big/ \left(\left(-512\sqrt{3} \times 2 \exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}} + 18\right)}\right) + 3\left(18 + \frac{8}{\sqrt{3}}\right)\left(32 \times 2 \exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}} + 18\right)}\right) + \sqrt{3}\right) + 48\right) \times \frac{1}{449\,953.65080382479717639}\right) - 18 - 7$$

Result:

125.47904236371872518672...

125.4790423… result very near to the Higgs boson mass 125.18 GeV

Series representations:

$$\frac{\frac{2}{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}{449953.650803824797176390000}-18-7=$$

$$-\Bigg(\Bigg(\Bigg(25.0000000000000000000000$$

$$\left(-1.5000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.$$

$$35.0823164690488122794055\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000$$

$$\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+1.0000000000000000000000$$

$$\left.\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)\Bigg/$$

$$\left(-1.5000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.0703125000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}$$

$$\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.0000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)$$

$$\frac{\dfrac{2}{-512\sqrt{3}\;2\exp\left(\dfrac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\dfrac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}{449953.65080382479717639000 0}-18-7=$$

$$\begin{aligned}
-\Bigg(\Bigg(\Bigg(&25.000000000000000000000\\
&\Bigg(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\\
&35.08231646904881227940 55\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&3.3750000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\\
&\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-0.052734375000000000000000\\
&\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{2}+1.00000000000000000000000\\
&\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{2}\Bigg)\Bigg)\Bigg/\\
&\Bigg(-1.500000000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\\
&0.070312500000000000000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&3.3750000000000000000000\\
&\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&0.052734375000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{2}+\\
&1.00000000000000000000000\\
&\exp\left(\frac{16}{4+9\sqrt{2}\,\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^{2}\Bigg)\Bigg)
\end{aligned}$$

$$\frac{2}{\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.650803824797176390000}}-18-7=$$

$$-\left(\left(25.000000000000000000000000\left(-1.5000000000000000000000000\right.\right.\right.$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+$$

$$35.082316469048812279405469\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.0000000000000000000000000\exp\left(\right.$$

$$\left.\left.\left.\left.\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)\right/$$

$$\left(-1.5000000000000000000000000\right.$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-$$

$$0.070312500000000000000000000\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.0000000000000000000000000$$

$$\left.\left.\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)$$

And:

27*1/2(((2/[(((-512*(sqrt3)*2* exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.6508038]-21)))-21+2

Input interpretation:

$$27\times\frac{1}{2}\left(2\Bigg/\left(\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449\,953.6508038}\right)-21\right)-21+2$$

Result:

1728.967071910...

1728.967….

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

Series representations:

$$\frac{27}{2}\left(\frac{2}{\frac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\;\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\;\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.65080380000}}-21\right)-21+2=$$

$$-\left(\left(302.50000000000\left(-1.50000000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.\right.\right.$$

$$39.149562796044\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+1.00000000000000$$

$$\left.\left.\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)\Big/$$

$$\left(-1.50000000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.070312500000000\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.37500000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$\left.\left.1.00000000000000\exp\left(\frac{16}{4+9\sqrt{2}\;\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)$$

$$
\begin{aligned}
&\frac{27}{2}\Bigg(\frac{2}{\dfrac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.65080380000}}-21\Bigg)-21+2=\\
&-\Bigg(\Bigg(302.50000000000\Bigg(-1.50000000000000\exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)+\\
&\quad 39.149562796044\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-3.3750000000000\\
&\quad \exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&\quad 0.052734375000000\sqrt{2}^{\,2}\Bigg(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\Bigg)^2+1.00000000000000\\
&\quad \exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)\sqrt{2}^{\,2}\Bigg(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\Bigg)^2\Bigg)\Bigg)\Bigg/\\
&\Bigg(-1.50000000000000\exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)-\\
&\quad 0.070312500000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&\quad 3.37500000000000\exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-\\
&\quad 0.052734375000000\sqrt{2}^{\,2}\Bigg(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\Bigg)^2+1.00000000000000\\
&\quad \exp\Bigg(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\Bigg)\sqrt{2}^{\,2}\Bigg(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\Bigg)^2\Bigg)\Bigg)
\end{aligned}
$$

$$\frac{27}{2}\left(\frac{2}{\frac{-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.65080380000}}-21\right)-21+2=$$

$$-\Bigg(\Bigg(302.5000000000000$$

$$\left(-1.5000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\right.$$

$$39.14956279604403\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-3.375000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.05273437500000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.0000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)\Bigg/$$

$$\left(-1.5000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.07031250000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-3.375000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.05273437500000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+1.0000000000000000$$

$$\left.\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\,\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)$$

From

$$a(t) = d_3 e^{-\frac{8}{\sqrt{3}(d_1+t)}} \sqrt{d_1+t} \sqrt{32 d_2 e^{\frac{32}{\sqrt{3}(d_1+t)}} + \sqrt{3}},$$

we obtain:

1/10* exp(-8/((sqrt3(8/(sqrt3)+18)))) sqrt((8/(sqrt3))+18)*(((((32*2* exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3)))))

Input:

$$\frac{1}{10} \exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\left(\sqrt{\frac{8}{\sqrt{3}}+18}\left(32\times 2 \exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)\right)$$

Exact result:

$$\frac{1}{10}\sqrt{18+\frac{8}{\sqrt{3}}}\, e^{-8/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\left(\sqrt{3}+64\, e^{32/\left(\sqrt{3}\left(18+\frac{8}{\sqrt{3}}\right)\right)}\right)$$

Decimal approximation:

56.836636959220994480778541533151307525114833554045264766 76...

56.836636959…

Alternate forms:

$$\sqrt{\frac{9}{50}+\frac{2}{25\sqrt{3}}}\, e^{1/227\left(16-36\sqrt{3}\right)}\left(\sqrt{3}+64\, e^{1/227\left(144\sqrt{3}-64\right)}\right)$$

$$\frac{1}{5}\sqrt{\frac{9}{2}+\frac{2}{\sqrt{3}}}\, e^{-4/227\left(9\sqrt{3}-4\right)}\left(\sqrt{3}+64\, e^{16/227\left(9\sqrt{3}-4\right)}\right)$$

$$\frac{\sqrt{\frac{1}{2}\left(4+9\sqrt{3}\right)}\, e^{-4/\left(4+9\sqrt{3}\right)}\left(\sqrt{3}+64\, e^{16/\left(4+9\sqrt{3}\right)}\right)}{5\sqrt[4]{3}}$$

Series representations:

$$\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\left(\sqrt{\frac{8}{\sqrt{3}}+18}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)\right)=$$

$$\frac{1}{10}\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{17+\frac{8}{\sqrt{3}}}$$
$$\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)+\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\sum_{k=0}^{\infty}\binom{\frac{1}{2}}{k}\left(17+\frac{8}{\sqrt{3}}\right)^{-k}$$

$$\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\left(\sqrt{\frac{8}{\sqrt{3}}+18}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)\right)=$$

$$\frac{1}{10}\exp\left(-\frac{4}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{17+\frac{8}{\sqrt{3}}}$$
$$\left(64\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)+\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(17+\frac{8}{\sqrt{3}}\right)^{-k}}{k!}$$

$$\frac{1}{10}\exp\left(-\frac{8}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)\left(\sqrt{\frac{8}{\sqrt{3}}+18}\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)\right)=$$

$$\frac{1}{10}\exp\left(-\frac{4}{4+9\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}}\right)$$

$$\sqrt{z_0}\left(64\exp\left(\frac{16}{4+9\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}}\right)+\right.$$

$$\left.\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}\right)$$

$$\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(18+\frac{8}{\sqrt{3}}-z_0\right)^k z_0^{-k}}{k!} \quad \text{for (not } (z_0\in\mathbb{R} \text{ and } -\infty<z_0\le 0))$$

Dividing the two results, we obtain:

56.8366369592209944 /(((((((-512*(sqrt3)*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.65080382479717639))))

Input interpretation:

$$56.8366369592209944\Big/\left(\left(\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\right.\right.\right.$$
$$\left.\left.\left.\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449\,953.65080382479717639}\right)$$

Result:

4276.36135039895872...

4276.36135…

Series representations:

$$\frac{\frac{56.83663695922099440000}{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}}{449953.65080382479717639000} =$$

$$-\left(\left(24974.4651359502790653\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\Bigg/\left(-1.50000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-0.07031250000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-3.37500000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.05273437500000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+1.00000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)$$

$$\frac{56.83663695922099440000}{\dfrac{-512\sqrt{3}\ 2\exp\left(\dfrac{32}{\sqrt{3}\left(\dfrac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\dfrac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\dfrac{32}{\sqrt{3}\left(\dfrac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449\,953.650803824797176390000}} =$$

$$-\left(\left(24\,974.4651359502790653\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}\right)\Big/\right.$$

$$\left(-1.50000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)-\right.$$

$$0.07031250000000000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}-$$

$$3.37500000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)\sqrt{2}$$

$$\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}-0.05273437500000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}\right)^{2}+$$

$$1.00000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}}\right)$$

$$\left.\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^{k}\left(-\frac{1}{2}\right)_{k}}{k!}\right)^{2}\right)\right)$$

$$\frac{56.83663695922099440000}{\frac{-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48}{449953.65080382479717639000}} =$$

$$\left(8324.8217119834263551\sqrt{\pi}\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right) \Bigg/ \left(1.00000000000000000000\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)\right.$$

$$\sqrt{\pi}^{2}+0.02343750000000000000\sqrt{\pi}\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)+$$

$$1.12500000000000000000\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)$$

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

$$0.00878906250000000000\left(\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)^{2}-$$

$$0.16666666666666666667\exp\left(\frac{32\sqrt{\pi}}{8\sqrt{\pi}+9\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)}\right)$$

$$\left.\left(\sum_{j=0}^{\infty}\operatorname{Res}_{s=-\frac{1}{2}+j} 2^{-s}\,\Gamma\left(-\frac{1}{2}-s\right)\Gamma(s)\right)^{2}\right)$$

From which:

1/6*56.8366369592209944 /((((((((-512*(sqrt3)*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[(((((32*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) *
1/449953.65080382479717639))))+55+8

Input interpretation:

$$\frac{1}{6}\times 56.8366369592209944 \Bigg/ \left(\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449953.65080382479717639}\right)+55+8$$

Result:

775.726891733159787...

775.7268917… result practically equal to the rest mass of Neutral rho meson 775.49

Series representations:

$$\frac{56.83663695922099440000}{\frac{\left(-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)6}{449953.650803824797176390000}}+55+8=$$

$$\Bigg(63.000000000000000000$$

$$\left(-1.5000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$66.14032608717005044\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.0000000000000000000$$

$$\left.\left.\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\right)\Bigg/$$

$$\left(-1.5000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.070312500000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.3750000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.052734375000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$\left.1.0000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)$$

$$\frac{56.83663695922099440000}{\frac{\left(-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)6}{449953.6508038247971763900000}}+55+8=$$

$$\Bigg(63.00000000000000000$$

$$\left(-1.5000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\right.$$

$$66.14032608717005044\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-3.3750000000000000000$$

$$\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$0.05273437500000000000\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+$$

$$1.0000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)$$

$$\left.\left.\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)\right)\Bigg/$$

$$\left(-1.5000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)-\right.$$

$$0.07031250000000000000\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-$$

$$3.3750000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\sqrt{2}$$

$$\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}-0.05273437500000000000\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2+$$

$$1.0000000000000000000\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)$$

$$\left.\sqrt{2}^2\left(\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)^2\right)$$

$$\frac{\dfrac{56.83663695922099440000}{\left(-512\sqrt{3}\;2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)6}}{449953.6508038247971763900000}+55+8=$$

$$\Bigg(63.00000000000000000000$$

$$\left(-1.50000000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$66.1403260871700504372\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-3.37500000000000000000$$

$$\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$0.0527343750000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.00000000000000000000$$

$$\left.\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)\Bigg)\Bigg/$$

$$\left(-1.50000000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)-\right.$$

$$0.0703125000000000000000\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-$$

$$3.37500000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}-0.0527343750000000000000\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}+$$

$$1.00000000000000000000\exp\left(\frac{32}{\sqrt{2}\left(18+\frac{8}{\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)$$

$$\left.\sqrt{2}^{2}\left(\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)^{2}\right)$$

and:

((((56.83663695+(((((((-512*(sqrt3)*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+3(18+(8/sqrt3))*[((((32*2*
exp(32/((sqrt3(8/(sqrt3)+18))))+sqrt3))))]+48))) * 1/449953.6508038))))))))^1/8-
(34+5)/10^3

Input interpretation:

$$\left(56.83663695+\left(-512\sqrt{3}\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\times\frac{1}{449953.6508038}\right)\hat{}\,(1/8)-\frac{34+5}{10^3}$$

Result:

1.6180714686...

1.6180714686…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Series representations:

$$\left(56.8366+\left(-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\Big/\ 449\,953.65080380000\right)\hat{}\,(1/8)-\frac{34+5}{10^3}=$$

$$\frac{1}{1000}\left(-39+1000\left(56.8368+0.000120012\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}+\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}\right)\left(0.00768079+\frac{0.00341368}{\sqrt{2}\ \sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}}-0.00227579\sqrt{2}\sum_{k=0}^{\infty}2^{-k}\binom{\frac{1}{2}}{k}\right)\right)\hat{}\,(1/8)\right)$$

$$\left(56.8366+\left(-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\Big/\ 449\,953.65080380000\right)\hat{}\,(1/8)-\frac{34+5}{10^3}=$$

$$\frac{1}{1000}\left(-39+1000\left(56.8368+0.000120012\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}+\exp\left(\frac{16}{4+9\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}\right)\left(0.00768079+\frac{0.00341368}{\sqrt{2}\ \sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}}-0.00227579\sqrt{2}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{2}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\hat{}\,(1/8)\right)$$

$$\left(56.8366 + \left(-512\sqrt{3}\ 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right) + 3\left(18+\frac{8}{\sqrt{3}}\right)\left(32\times 2\exp\left(\frac{32}{\sqrt{3}\left(\frac{8}{\sqrt{3}}+18\right)}\right)+\sqrt{3}\right)+48\right)\Big/ 449\,953.65080380000\right)\text{^}(1/8) - \frac{34+5}{10^3} =$$

$$\frac{1}{1000}\left(-39+1000\left(56.8368+0.000120012\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!} + \exp\left(\frac{16}{4+9\sqrt{z_0}\ \sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}}\right)\left(0.00768079+\frac{0.00341368}{\sqrt{z_0}\ \sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}} - 0.00227579\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}\right)\right)\text{^}(1/8)\right) \quad \text{for (not } (z_0\in\mathbb{R} \text{ and } -\infty < z_0 \le 0))$$

From:

On Modified Gravity
Ivan Dimitrijevic1, Branko Dragovich2, Jelena Grujic3 and Zoran Rakic
arXiv:1202.2352v2 [hep-th] 9 Apr 2012

Now, we have that:

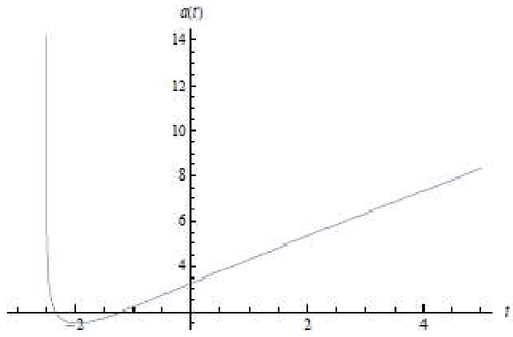


Figure 1: Scale factor $a(t)$ given by (23) for $d_1 = -2.5, \quad d_2 = 2$ and $d_3 = 1$.

$$\ddot{a}(T) = -\frac{d_3 T^{\frac{1}{12}(-21-\sqrt{57})}\left(\left(\sqrt{57}-5\right) d_2^2 T^{2\sqrt{\frac{19}{3}}} - 48 d_2 T^{\sqrt{\frac{19}{3}}} - \sqrt{57} - 5\right)}{24\left(d_2 T^{\sqrt{\frac{19}{3}}} + 1\right)^{3/2}}, \qquad (24)$$

where $T = t - d_1$.

-(((((6.5)^(1/12*(-21-sqrt57))*(((((sqrt57)-5)4*(((6.5^2)))^(sqrt(19/3)) – 48*4*6.5^((19/3)^1/2)-sqrt57 – 5))))))) / (((24*(((((4*6.5^((19/3)^1/2)+1))^1.5))))))

Input:

$$-\frac{6.5^{1/12\left(-21-\sqrt{57}\right)}\left(\left(\sqrt{57}-5\right)\times 4\left(6.5^2\right)^{\sqrt{19/3}} - 48\times 4\times 6.5^{\sqrt{19/3}} - \sqrt{57} - 5\right)}{24\left(4\times 6.5^{\sqrt{19/3}} + 1\right)^{1.5}}$$

Result:

−0.00539497...

-0.00539497...

From which:

-(322-18-4) * -(((((6.5)^(1/12*(-21-sqrt57))*(((((sqrt57)-5)4*(((6.5^2)))^(sqrt(19/3)) – 48*4*6.5^((19/3)^1/2)-sqrt57 – 5))))))) / (((24*(((((4*6.5^((19/3)^1/2)+1))^1.5))))))

Input:

$$-(322-18-4)\left(-\frac{6.5^{1/12\left(-21-\sqrt{57}\right)}\left(\left(\sqrt{57}-5\right)\times 4\left(6.5^{2}\right)^{\sqrt{19/3}}-48\times 4\times 6.5^{\sqrt{19/3}}-\sqrt{57}-5\right)}{24\left(4\times 6.5^{\sqrt{19/3}}+1\right)^{1.5}}\right)$$

Result:

1.618491224523286630082955178469635338137236965130242631501...

1.61849122452328….. result that is a very good approximation to the value of the golden ratio 1.618033988749...

From

$$d_2(t-d_1)^{\sqrt{\frac{19}{3}}} < \frac{24}{\sqrt{57}-5} + \frac{4\sqrt{38}}{\sqrt{57}-5}$$

we obtain:

2(4+2.5)^(sqrt(19/3))

Input:

$$2\,(4+2.5)^{\sqrt{19/3}}$$

Result:

222.237...

222.237….

24/((sqrt57)-5)+ 4sqrt38/((sqrt57)-5)

Input:

$$\frac{24}{\sqrt{57}-5}+\frac{4\sqrt{38}}{\sqrt{57}-5}$$

Decimal approximation:

19.08267271741872053755243352104498249035803630967998574929...

19.082672717418…..

Alternate forms:

$$\frac{1}{8}\left(30+6\sqrt{57}+19\sqrt{6}+5\sqrt{38}\right)$$

$$\frac{1}{8}\left(6+\sqrt{38}\right)\left(5+\sqrt{57}\right)$$

$$\frac{4\left(6+\sqrt{38}\right)}{\sqrt{57}-5}$$

Minimal polynomial:

$$8x^4-120x^3-617x^2-120x+8$$

((2(4+2.5)^(sqrt(19/3))))x < 24/((sqrt57)-5)+ (4sqrt38)/((sqrt57)-5)

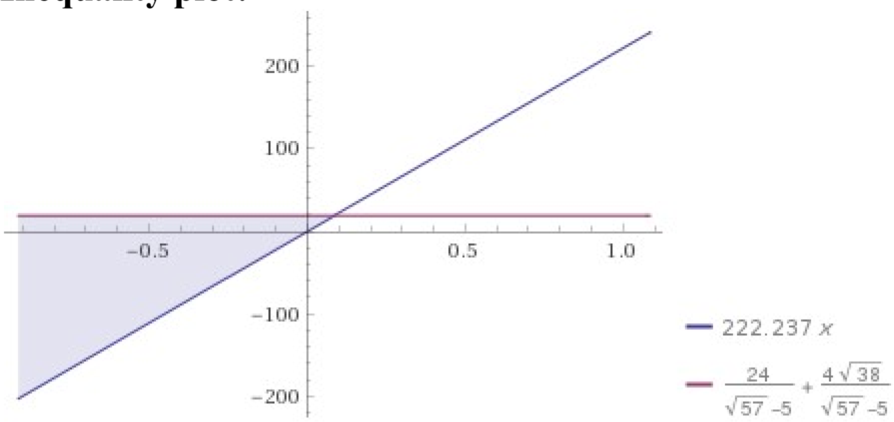
Input:

$$\left(2\,(4+2.5)^{\sqrt{19/3}}\right)x<\frac{24}{\sqrt{57}-5}+\frac{4\sqrt{38}}{\sqrt{57}-5}$$

Result:

$$222.237\,x<\frac{24}{\sqrt{57}-5}+\frac{4\sqrt{38}}{\sqrt{57}-5}$$

Inequality plot:



Alternate forms:

$$x<0.0858662$$

$$222.237\, x < \frac{4\left(6+\sqrt{38}\right)}{\sqrt{57}-5}$$

$$222.237\, x < \frac{1}{4}\left(15+19\sqrt{\frac{3}{2}}+2\sqrt{\frac{1501}{8}+\frac{285\sqrt{\frac{3}{2}}}{2}}\right)$$

Alternate form assuming x>0:

$x < 0.0858662$

Solution:

$x < 0.0858662$

x < 0.0858662

we have the following Ramanujan mock theta function (7th order)

$$\text{(iii)} \qquad \frac{1}{1-q}+\frac{q^2}{(1-q^2)(1-q^3)}+\frac{q^6}{(1-q^3)(1-q^4)(1-q^5)}+\dots$$

That is equal to **-0.0814135**. Inverting the sign, we have 0.0814135, thence a possible solution for the previous expression

From:

New Cosmological Solutions in Nonlocal Modified Gravity
I. Dimitrijevic, B. Dragovich, J. Grujicc and Z. Rakic - arXiv:1302.2794v1 [gr-qc] 11 Feb 2013

We have that:

In this paper we consider nonlocal gravity model without matter, given by the action in the form

$$S = \int d^4x\sqrt{-g}\Big(\frac{R-2\Lambda}{16\pi G} + \frac{C}{2}R\mathcal{F}(\Box)R\Big), \tag{1}$$

where $\mathcal{F}(\Box) = \sum_{n=0}^{\infty} f_n \Box^n$ is an analytic function of the d'Alembert-Beltrami operator and C is a constant. Study of this model (1) was proposed in [4] and some further developments are presented in [5, 6, 7, 8]. This model is attractive because it is ghost free and has some nonsingular bounce solutions, which can solve the Big Bang cosmological singularity problem.

By variation of the action (1) with respect to metric $g_{\mu\nu}$ one obtains the corresponding equation of motion:

$$\begin{aligned} &C\Big(2R_{\mu\nu}\mathcal{F}(\Box)R - 2(\nabla_\mu\nabla_\nu - g_{\mu\nu}\Box)(\mathcal{F}(\Box)R) - \frac{1}{2}g_{\mu\nu}R\mathcal{F}(\Box)R \\ &+\sum_{n=1}^{\infty}\frac{f_n}{2}\sum_{l=0}^{n-1}\big(g_{\mu\nu}\left(g^{\alpha\beta}\partial_\alpha\Box^l R\partial_\beta\Box^{n-1-l}R + \Box^l R\Box^{n-l}R\right) \\ &-2\partial_\mu\Box^l R\partial_\nu\Box^{n-1-l}R\big)\Big) = \frac{-1}{8\pi G}(G_{\mu\nu} + \Lambda g_{\mu\nu}). \end{aligned} \tag{2}$$

Ansatz and Solutions

$$a(t) = a_0(\sigma e^{\lambda t} + \tau e^{-\lambda t}), \quad 0 < a_0, \lambda, \sigma, \tau \in \mathbb{R}. \tag{7}$$

Equations (13) and (14) are satisfied when $\lambda = \pm\sqrt{\frac{\Lambda}{3}}$, as well as $Q_1 = Q_2 = Q_3 = 0$ and $R_1 = R_2 = R_3 = 0$. Note that this approach to find conditions

$$\begin{aligned} &\frac{a_0^4\tau^6}{4\pi G}\left(3\lambda^2-\Lambda\right) + 3a_0^2\tau^4 Q_1 e^{2\lambda t} + 6a_0^2\sigma\tau^3 Q_2 e^{4\lambda t} - 2\sigma\tau Q_3 e^{6\lambda t} \\ &+6a_0^2\sigma^3\tau Q_2 e^{8\lambda t} + 3a_0^2\sigma^4 Q_1 e^{10\lambda t} + \frac{a_0^4\sigma^6}{4\pi G}\left(3\lambda^2-\Lambda\right)e^{12\lambda t} = 0, \end{aligned} \tag{13}$$

$$\begin{aligned} &\frac{\tau^6 a_0^4}{8\pi G}\left(3\lambda^2-\Lambda\right) + 3\tau^4 a_0^2 R_1 e^{2\lambda t} + 3\tau^2 R_2 e^{4\lambda t} + 2\sigma\tau R_3 e^{6\lambda t} \\ &+3\sigma^2 R_2 e^{8\lambda t} + 3\sigma^4 a_0^2 R_1 e^{10\lambda t} + \frac{\sigma^6 a_0^4}{8\pi G}\left(3\lambda^2-\Lambda\right)e^{12\lambda t} = 0, \end{aligned} \tag{14}$$

For $a_0 = 1/8$, $\tau = 1/2$, $\sigma = 1/4$, λ = -sqrt(1/3(1.1056e-52)) and G = 6.67408e-11 , we obtain:

1/(4Pi*(6.67408e-11)) * ((1/8)^4*(1/2)^6*(3*(1/3(1.1056e-52))-(1.1056e-52)))+1/(4Pi*(6.67408e-11))*((((1/8)^4*(1/4)^6*(3*(1/3(1.1056e-52))-(1.1056e-52)))*exp((12*4* sqrt(1/3(1.1056e-52))))))

Input interpretation:

$$\frac{1}{4\pi\times 6.67408\times 10^{-11}}\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{2}\right)^6\left(3\left(\frac{1}{3}\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)+\frac{1}{4\pi\times 6.67408\times 10^{-11}}\left(\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{4}\right)^6\left(3\left(\frac{1}{3}\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)\exp\left(12\times 4\sqrt{\frac{1}{3}\times 1.1056\times 10^{-52}}\right)\right)$$

Result:

0

Placing λ = -sqrt(1/3i^2(1.1056e-52)) and λ^2 = (1/3i(1.1056e-52)) , we obtain:

1/(4Pi*(6.67408e-11)) * ((1/8)^4*(1/2)^6*(3*(1/3i(1.1056e-52))-(1.1056e-52)))+1/(4Pi*(6.67408e-11))*((((1/8)^4*(1/4)^6*(3*(1/3i(1.1056e-52))-(1.1056e-52)))*exp((12*(4)* -sqrt(1/3i^2(1.1056e-52))))))

Input interpretation:

$$\frac{1}{4\pi\times 6.67408\times 10^{-11}}\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{2}\right)^6\left(3\left(\frac{1}{3}\,i\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)+\frac{1}{4\pi\times 6.67408\times 10^{-11}}\left(\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{4}\right)^6\left(3\left(\frac{1}{3}\,i\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)\exp\left(12\times 4\times(-1)\sqrt{\frac{1}{3}\,i^2\times 1.1056\times 10^{-52}}\right)\right)$$

i is the imaginary unit

Result:

$-5.10729\ldots\times 10^{-49}+5.10729\ldots\times 10^{-49}\,i$

Polar coordinates:

$r = 7.22279\times 10^{-49}$ (radius), $\theta = 135°$ (angle)

$7.22279 * 10^{-49}$

And:

1/(8Pi*(6.67408e-11)) * ((1/8)^4*(1/2)^6*(3*(1/3i(1.1056e-52))-(1.1056e-52)))+1/(8Pi*(6.67408e-11))*((((1/8)^4*(1/4)^6*(3*(1/3i(1.1056e-52))-(1.1056e-52)))*exp((12*(4)* -sqrt(1/3i^2(1.1056e-52))))))

Input interpretation:

$$\frac{1}{8\pi\times 6.67408\times 10^{-11}}\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{2}\right)^6\left(3\left(\frac{1}{3}\,i\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)+\frac{1}{8\pi\times 6.67408\times 10^{-11}}\left(\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{4}\right)^6\left(3\left(\frac{1}{3}\,i\times 1.1056\times 10^{-52}\right)-1.1056\times 10^{-52}\right)\right)\exp\left(12\times 4\times(-1)\sqrt{\frac{1}{3}\,i^2\times 1.1056\times 10^{-52}}\right)\right)$$

i is the imaginary unit

Result:

$-2.55364\ldots\times 10^{-49}+2.55364\ldots\times 10^{-49}\,i$

Polar coordinates:

$r = 3.6114\times 10^{-49}$ (radius), $\theta = 135°$ (angle)

$3.6114 * 10^{-49}$

From which:

(Pi)^(6/5) *(3.6114×10^-49)^1/125

Input interpretation:

$\pi^{6/5}\sqrt[125]{3.6114\times 10^{-49}}$

Result:

1.618233740217247659320776504382378851196519601779493642834...

1.618233740217..... result that is a very good approximation to the value of the golden ratio 1.618033988749...

Dividing the two results, we obtain:

(7.22279×10^-49 / 3.6114×10^-49)

Input interpretation:

$$\frac{7.22279\times 10^{-49}}{3.6114\times 10^{-49}}$$

Result:

1.999997230990751509110040427535027966993409757988591681896...

1.9999972309907515….. ≈ 2

2(7.22279×10^-49 / 3.6114×10^-49)^6 - Pi+1/golden ratio

Input interpretation:

$$2\left(\frac{7.22279\times 10^{-49}}{3.6114\times 10^{-49}}\right)^6-\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

125.475...

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

2(7.22279×10^-49 / 3.6114×10^-49)^6 +11+1/golden ratio

Input interpretation:

$$2\left(\frac{7.22279\times 10^{-49}}{3.6114\times 10^{-49}}\right)^6+11+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

139.617...

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

Now, we have that:

((sqrt3)/2 + 1/2*i)

Input:

$$\frac{\sqrt{3}}{2} + \frac{1}{2} i$$

i is the imaginary unit

Result:

$$\frac{\sqrt{3}}{2} + \frac{i}{2}$$

Decimal approximation:

0.86602540378443864676372317075293618347140262690519031402... +
0.5 i

(0.8660254 +0.5 i)

And we approximate (0.866 + 0.5i) , multiplying by λ, we obtain:

1/(4Pi*(6.67e-11)) ((1/8)^4*(1/2)^6(3(1/3(1.105e-52)(0.866 +0.5 i))-(1.105e-52)))+1/(4Pi(6.67e-11))((1/8)^4(1/4)^6(3(1/3(1.105e-52)(0.866 +0.5 i))-(1.105e-52)))exp(48sqrt(1/3(1.105e-52)(0.866+0.5 i)))

Input interpretation:

$$\frac{1}{4\pi \times 6.67 \times 10^{-11}} \left(\left(\frac{1}{8}\right)^4 \left(\frac{1}{2}\right)^6 \left(3\left(\frac{1}{3} \times 1.105 \times 10^{-52} \times (0.866 + 0.5 i)\right) - 1.105 \times 10^{-52}\right)\right) + \frac{1}{4\pi \times 6.67 \times 10^{-11}} \left(\left(\frac{1}{8}\right)^4 \left(\frac{1}{4}\right)^6 \left(3\left(\frac{1}{3} \times 1.105 \times 10^{-52} \times (0.866 + 0.5 i)\right) - 1.105 \times 10^{-52}\right)\right) \exp\left(48 \sqrt{\frac{1}{3} \times 1.105 \times 10^{-52} \times (0.866 + 0.5 i)}\right)$$

i is the imaginary unit

Result:

$$-6.84423... \times 10^{-50} + 2.55382... \times 10^{-49} i$$

Polar coordinates:

$r = 2.64394 \times 10^{-49}$ (radius), $\theta = 105.003°$ (angle)

$2.64394 * 10^{-49}$

And:

1/(8Pi*(6.67e-11)) ((1/8)^4*(1/2)^6(3(1/3(1.105e-52)(0.866 +0.5 i))-(1.105e-52)))+1/(8Pi(6.67e-11))((1/8)^4(1/4)^6(3(1/3(1.105e-52)(0.866 +0.5 i))-(1.105e-52)))exp(48sqrt(1/3(1.105e-52)(0.866+0.5 i)))

Input interpretation:

$$\frac{1}{8\,\pi\times 6.67\times 10^{-11}}\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{2}\right)^6\left(3\left(\frac{1}{3}\times 1.105\times 10^{-52}\times(0.866+0.5\,i)\right)-1.105\times 10^{-52}\right)\right)+\frac{1}{8\,\pi\times 6.67\times 10^{-11}}\left(\left(\frac{1}{8}\right)^4\left(\frac{1}{4}\right)^6\left(3\left(\frac{1}{3}\times 1.105\times 10^{-52}\times(0.866+0.5\,i)\right)-1.105\times 10^{-52}\right)\right)\exp\left(48\sqrt{\frac{1}{3}\times 1.105\times 10^{-52}\times(0.866+0.5\,i)}\right)$$

i is the imaginary unit

Result:

$-3.42212\ldots\times 10^{-50}+1.27691\ldots\times 10^{-49}\,i$

Polar coordinates:

$r = 1.32197\times 10^{-49}$ (radius), $\theta = 105.003°$ (angle)

$1.32197 * 10^{-49}$

We have also:

(Pi)^(6/5)(1.32197 * 10^-49)^1/126.109

Input interpretation:

$$\pi^{6/5}\sqrt[126.109]{\frac{1.32197}{10^{49}}}$$

Result:

1.618036565805288978251712706169929775300857078157956377660...

1.6180365658052889….. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Alternative representations:

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = (180\,°)^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = (-i \log(-1))^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = \cos^{-1}(-1)^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}}$$

Series representations:

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 2.16212 \left(\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}\right)^{6/5}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 0.941119 \left(-1 + \sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}\right)^{6/5}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 0.409646 \left(\sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}\right)^{6/5}$$

Integral representations:

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 0.941119 \left(\int_0^{\infty} \frac{1}{1+t^2}\, dt\right)^{6/5}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 2.16212 \left(\int_0^{1} \sqrt{1-t^2}\, dt\right)^{6/5}$$

$$\pi^{6/5} \sqrt[126.109]{\frac{1.32197}{10^{49}}} = 0.941119 \left(\int_0^{\infty} \frac{\sin(t)}{t}\, dt\right)^{6/5}$$

And, dividing the two results:

(2.64394×10^-49 / 1.32197×10^-49)

Input interpretation:

$$\frac{2.64394\times 10^{-49}}{1.32197\times 10^{-49}}$$

Result:

2

2

2(2.64394×10^-49 / 1.32197×10^-49)^6

Input interpretation:

$$2\left(\frac{2.64394\times 10^{-49}}{1.32197\times 10^{-49}}\right)^6$$

Result:

128

128

From which:

2(2.64394×10^-49 / 1.32197×10^-49)^6 - Pi + 1/golden ratio

Input interpretation:

$$2\left(\frac{2.64394\times 10^{-49}}{1.32197\times 10^{-49}}\right)^6-\pi+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

125.476...

125.476... result very near to the Higgs boson mass 125.18 GeV

And:

2(2.64394×10^-49 / 1.32197×10^-49)^6 +11+1/golden ratio

Input interpretation:

$$2\left(\frac{2.64394\times 10^{-49}}{1.32197\times 10^{-49}}\right)^6+11+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

139.618...

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

From:

Modular equations and approximations to π
Srinivasa Ramanujan - Quarterly Journal of Mathematics, XLV, 1914, 350 – 372

$$G_{505}^2 = (2+\sqrt{5})\sqrt{\left\{\left(\frac{1+\sqrt{5}}{2}\right)(10+\sqrt{101})\right\}} \times \left\{\left(\frac{5\sqrt{5}+\sqrt{101}}{4}\right)+\sqrt{\left(\frac{105+\sqrt{505}}{8}\right)}\right\}$$

(2+sqrt5) ((((1+sqrt5)/2)(10+sqrt101)))^0.5
(((1/4(5sqrt5+sqrt101)+(1/8(105+sqrt505))^0.5)))

Input:

$$\left(2+\sqrt{5}\right)\sqrt{\left(\frac{1}{2}\left(1+\sqrt{5}\right)\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\sqrt{\frac{1}{8}\left(105+\sqrt{505}\right)}\right)$$

Exact result:

$$\left(2+\sqrt{5}\right)\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\frac{1}{2}\sqrt{\frac{1}{2}\left(105+\sqrt{505}\right)}\right)$$

Decimal approximation:

224.3689593513276391839941363576172939146443280007364930381...

224.36895935…

Alternate forms:

$$\sqrt{\text{root of } 256x^8 - 13134080x^7 + 12406662784x^6 + 566469885440x^5 + 8970692383216x^4 + 59000758979200x^3 + 133454526025384x^2 - 21580568998020x + 63001502001 \text{ near } x = 50341.4}$$

$$\frac{1}{4}\left(2+\sqrt{5}\right)\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(5\sqrt{5}+\sqrt{101}\right) + \frac{1}{4}\left(2+\sqrt{5}\right)\sqrt{\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}$$

$$\frac{25}{4}\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + \frac{5}{2}\sqrt{\frac{5}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + \frac{1}{2}\sqrt{\frac{101}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + \frac{1}{4}\sqrt{\frac{505}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + \frac{1}{2}\sqrt{\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)} + \frac{1}{4}\sqrt{5\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}$$

Minimal polynomial:

$$256x^{16} - 13134080x^{14} + 12406662784x^{12} + 566469885440x^{10} + 8970692383216x^8 + 59000758979200x^6 + 133454526025384x^4 - 21580568998020x^2 + 63001502001$$

From which:

(2+sqrt5) (((x)(10+sqrt101)))^0.5 (((1/4(5sqrt5+sqrt101)+(1/8(105+sqrt505))^0.5)))
= 224.368959351327639

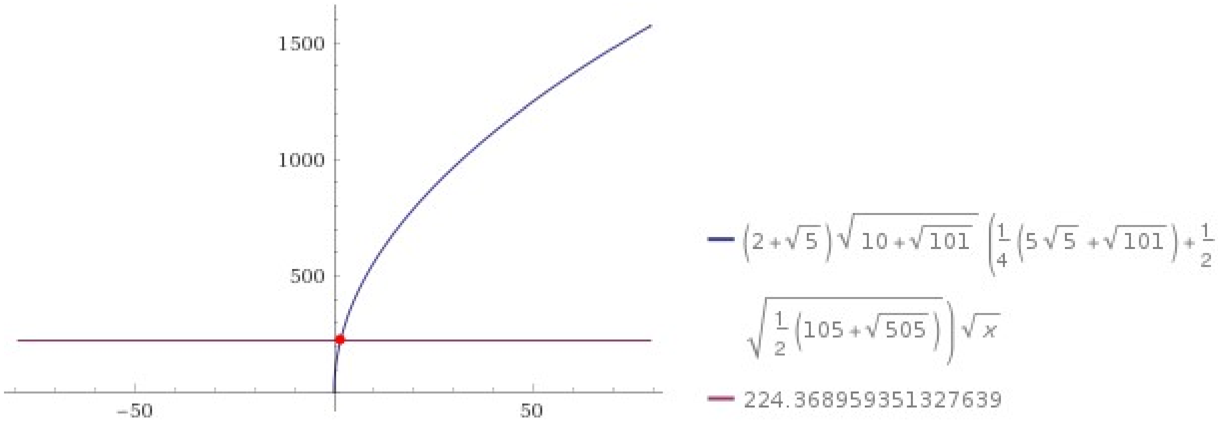
Input interpretation:

$$\left(2+\sqrt{5}\right)\sqrt{x\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\sqrt{\frac{1}{8}\left(105+\sqrt{505}\right)}\right) = 224.368959351327639$$

Result:

$$\left(2+\sqrt{5}\right)\sqrt{10+\sqrt{101}}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\frac{1}{2}\sqrt{\frac{1}{2}\left(105+\sqrt{505}\right)}\right)\sqrt{x} = 224.368959351327639$$

Plot:



Alternate form:

$$\sqrt{x}\sqrt{\text{root of } 256x^8 - 8125440x^7 + 4996878336x^6 - 19944328960x^5 - 1088503336224x^4 + 2048528617920x^3 + 55033901841536x^2 + 13356686893680x + 63001502001 \text{ near } x = 31112.7} = 224.368959351327639$$

Alternate form assuming x is positive:

$$1.00000000000000000\sqrt{x} = 1.27201964951406896$$

Expanded form:

$$\frac{1}{2}\sqrt{\frac{5}{2}\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}\sqrt{x} + \sqrt{\frac{1}{2}\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}\sqrt{x} + \frac{1}{4}\sqrt{505\left(10+\sqrt{101}\right)}\sqrt{x} + \frac{1}{2}\sqrt{101\left(10+\sqrt{101}\right)}\sqrt{x} + \frac{5}{2}\sqrt{5\left(10+\sqrt{101}\right)}\sqrt{x} + \frac{25}{4}\sqrt{10+\sqrt{101}}\sqrt{x} = 224.368959351327639$$

Alternate form assuming x>0:

$$\frac{1}{4}\left(2+\sqrt{5}\right)\left(5\sqrt{5\left(10+\sqrt{101}\right)} + \sqrt{101\left(10+\sqrt{101}\right)} + \sqrt{2100+202\sqrt{5}+210\sqrt{101}+20\sqrt{505}}\right)\sqrt{x} = 224.368959351327639$$

Solution:

$x = 1.618033988749894\,85$

1.618033988…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

We have also:

(2+sqrt5) ((((1+sqrt5)/2)(10+sqrt101)))^0.5
(((1/4(5sqrt5+sqrt101)+(1/8(105+sqrt505))^0.5))) -76-7-2

Input:

$$\left(2+\sqrt{5}\right)\sqrt{\left(\frac{1}{2}\left(1+\sqrt{5}\right)\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\sqrt{\frac{1}{8}\left(105+\sqrt{505}\right)}\right)-76-7-2$$

Exact result:

$$\left(2+\sqrt{5}\right)\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\frac{1}{2}\sqrt{\frac{1}{2}\left(105+\sqrt{505}\right)}\right)-85$$

Decimal approximation:

139.3689593513276391839941363576172939146443280007364930381...

139.36895935…. result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\sqrt{\left(\left(\text{root of } 256x^8+1662720x^7-277675353216x^6-8452540123228160x^5-114807608801660496784x^4-876500880901094122078400x^3-3901271897869273955261554616x^2-9499515457467325191113577199220x-9821100481013481605205617304777499 \text{ near } x=43116.4\right)+7225\right)}-85$$

$$\frac{1}{8}\left(-680+25\sqrt{2\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+10\sqrt{10\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+2\sqrt{202\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\sqrt{1010\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+4\sqrt{1555+1151\sqrt{5}+155\sqrt{101}+115\sqrt{505}}+2\sqrt{5\left(1555+1151\sqrt{5}+155\sqrt{101}+115\sqrt{505}\right)}\right)$$

$$-85+\frac{25}{4}\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{5}{2}\sqrt{\frac{5}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{2}\sqrt{\frac{101}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{4}\sqrt{\frac{505}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{2}\sqrt{\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}+\frac{1}{4}\sqrt{5\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}$$

Minimal polynomial:

$$256x^{16}+348160x^{15}+208817920x^{14}+72411404800x^{13}+15698392614784x^{12}+2038191152519680x^{11}+92798501841635840x^{10}-21107571563524096000x^{9}-5576832659224269136784x^{8}-723075263450349105813120x^{7}-62784778426566553736424000x^{6}-3903354403604426642371152000x^{5}-175782361219228997858423474616x^{4}-5632681273142628566560107769440x^{3}-122246273305889342498172505601620x^{2}-1614917627769445282489308123867400x-9821100481013481605205617304777499$$

(2+sqrt5) ((((1+sqrt5)/2)(10+sqrt101)))^0.5
(((1/4(5sqrt5+sqrt101)+(1/8(105+sqrt505))^0.5))) -89-8-2

Input:

$$\left(2+\sqrt{5}\right)\sqrt{\left(\frac{1}{2}\left(1+\sqrt{5}\right)\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\sqrt{\frac{1}{8}\left(105+\sqrt{505}\right)}\right)-89-8-2$$

Exact result:

$$\left(2+\sqrt{5}\right)\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\frac{1}{2}\sqrt{\frac{1}{2}\left(105+\sqrt{505}\right)}\right)-99$$

Decimal approximation:

125.36895935132763918399413635761729391464432800073649303810...

125.36895935….. result very near to the Higgs boson mass 125.18 GeV

Alternate forms:

$$\sqrt{\left(\text{root of } 256x^8+6938368x^7-200127943808x^6-12267532066969600x^5-249531341802063522704x^4-2711111744847801069053120x^3-16868103226865906575728518072x^2-56942647252352168046706464820596x-81256059552286589390769064973654619 \text{ near } x=40540.4+9801\right)}-99$$

$$\frac{1}{8}\left(-792+25\sqrt{2\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+10\sqrt{10\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+2\sqrt{202\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\sqrt{1010\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+4\sqrt{1555+1151\sqrt{5}+155\sqrt{101}+115\sqrt{505}}+2\sqrt{5\left(1555+1151\sqrt{5}+155\sqrt{101}+115\sqrt{505}\right)}\right)$$

$$-99+\frac{25}{4}\sqrt{\frac{1}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{5}{2}\sqrt{\frac{5}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{2}\sqrt{\frac{101}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{4}\sqrt{\frac{505}{2}\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}+\frac{1}{2}\sqrt{\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}+\frac{1}{4}\sqrt{5\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}$$

Minimal polynomial:

$$256x^{16}+405504x^{15}+287952640x^{14}+120898229760x^{13}+33054328215424x^{12}+6009975505442304x^{11}+675189373331159552x^{10}+25559949323299184640x^9-6141488741796675265424x^8-1432518783833375371748736x^7-167738666069403725006923328x^6-13091457040259534138185517952x^5-719245475849918973390814965176x^4-27724480997151511239997879419552x^3-718239766158403169441567287315284x^2-11274644155965729273247880034478008x-81256059552286589390769064973654619$$

8[(2+sqrt5) ((((1+sqrt5)/2)(10+sqrt101)))^0.5 (((1/4(5sqrt5+sqrt101)+(1/8(105+sqrt505))^0.5)))]-8^2-2

Input:

$$8\left(\left(2+\sqrt{5}\right)\sqrt{\left(\frac{1}{2}\left(1+\sqrt{5}\right)\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\sqrt{\frac{1}{8}\left(105+\sqrt{505}\right)}\right)\right)-8^2-2$$

Exact result:

$$4\left(2+\sqrt{5}\right)\sqrt{2\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(\frac{1}{4}\left(5\sqrt{5}+\sqrt{101}\right)+\frac{1}{2}\sqrt{\frac{1}{2}\left(105+\sqrt{505}\right)}\right)-66$$

Decimal approximation:

1728.951674810621113471953090860938351317154624005891944305...

1728.9516748….

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

Alternate forms:

$$\left(2+\sqrt{5}\right)\sqrt{2\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)}\left(5\sqrt{5}+\sqrt{101}+\sqrt{2\left(105+\sqrt{505}\right)}\right)-66$$

$$\sqrt{\left(\left(\text{root of } x^8 - 3248672x^7 + 98916805312x^6 + 4464479972088320x^5 + 60247225185568953856x^4 + 407414835057249074421760x^3 + 1513753237708731714916630528x^2 + 2964169623306115098588771385344x + 2401087699819713122929090227142656 \text{ near } x = 3.2175\times 10^6\right) + 4356\right) - 66}$$

$$-66 + 25\sqrt{2\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + 10\sqrt{10\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + 2\sqrt{202\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + \sqrt{1010\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)} + 2\left(2+\sqrt{5}\right)\sqrt{\left(1+\sqrt{5}\right)\left(10+\sqrt{101}\right)\left(105+\sqrt{505}\right)}$$

Minimal polynomial:

$$x^{16} + 1056x^{15} - 2760800x^{14} - 2872974720x^{13} - 1068533569856x^{12} - 180928167704064x^{11} - 4054416301470208x^{10} + 4768275859376916480x^9 + 1168396273187848623616x^8 + 156008059681182960869376x^7 + 14006142392318457923264512x^6 + 894515473271346020443717632x^5 + 41100944577880805880511381504x^4 + 1336671938112056211937656963072x^3 + 29339806037143056499296141705216x^2 + 391270390276407193013717822865408x + 2401087699819713122929090227142656$$

Observations

Figs.

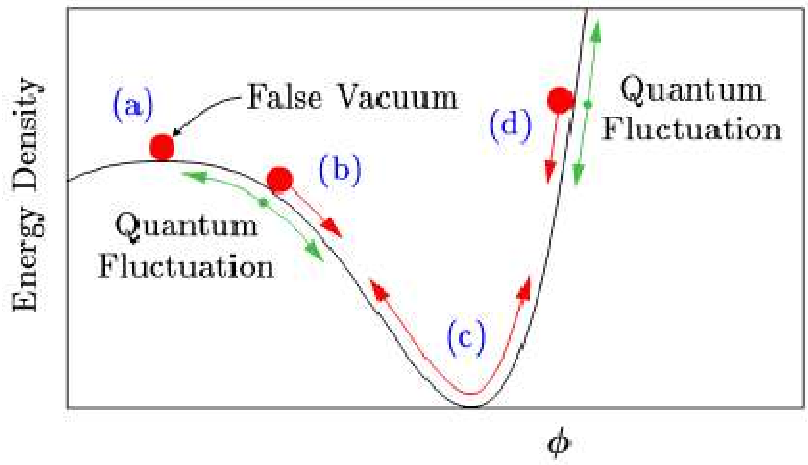
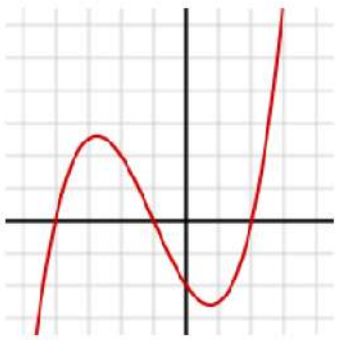


FIG. 1: In simple inflationary models, the universe at early times is dominated by the potential energy density of a scalar field, ϕ. Red arrows show the classical motion of ϕ. When ϕ is near region (a), the energy density will remain nearly constant, $\rho \cong \rho_f$, even as the universe expands.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



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

The ratio between M_0 and q

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

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

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

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

1.732050787905194420703947625671018160083566548802082460520...

1.7320507879

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

We note that:

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

i is the imaginary unit

$i\sqrt{3}$

1.732050807568877293527446341505872366942805253810380628055... i

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

1.73205

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

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

We have that the previous result

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

$$= 1.7320508075688772935274463415058723669428052538103806280558\ldots\, i$$

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

can be related with:

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

Considering:

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

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

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

Thence:

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

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

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

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

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

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

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

From Wikipedia

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

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

Note that:

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

Hence

$$64 g_{22}^{24} = e^{\pi\sqrt{22}} - 24 + 276 e^{-\pi\sqrt{22}} - \cdots,$$
$$64 g_{22}^{-24} = 4096 e^{-\pi\sqrt{22}} + \cdots,$$

so that

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

Hence

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

Thence:

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

And

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

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

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

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

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

The beginning of the sequence is thus:

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

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

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

The sequence of Lucas numbers is:

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

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

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

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

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

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

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