On some formulas of Manuscript Book 1 of Srinivasa Ramanujan: new possible mathematical connections with various parameters of Particle Physics and Cosmology.

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Abstract

In this research thesis, we have analyzed further formulas of Manuscript Book 1 of Srinivasa Ramanujan and described new possible mathematical connections with various parameters of Particle Physics and Cosmology (Cosmological Constant, some parameters of Dark Energy)

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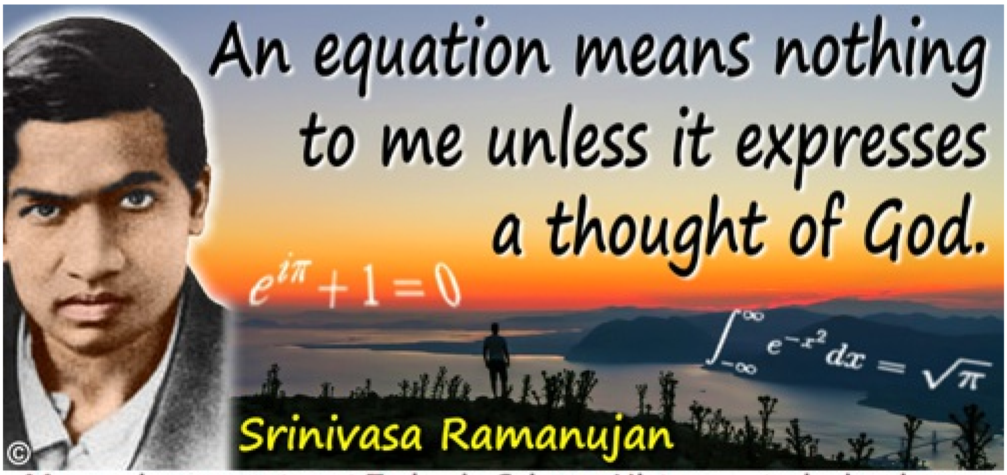


https://todayinsci.com/R/Ramanujan_Srinivasa/RamanujanSrinivasa-Quotations.htm

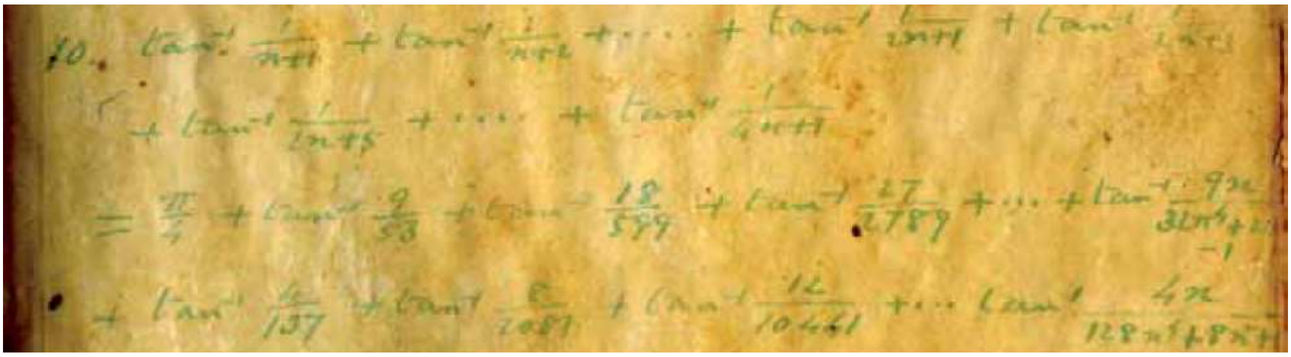
Summary

In this research thesis, we have analyzed the possible and new connections between different formulas of Manuscript Book 1 of Srinivasa Ramanujan and some parameters concerning Particle Physics and Cosmology. In the course of the discussion we describe and highlight the connections between some developments of Ramanujan equations and particles type solutions such as the mass of the Higgs boson, and the masses of other baryons and mesons, principally f_0(1710) scalar meson candidate "glueball". Moreover, solutions of Ramanujan equations, connected with the mass of the π meson 139.57 have been described and highlighted. Furthermore, we have obtained also the values of some black hole entropies, the value of the Cosmological Constant and some parameters of Dark Energy.

All the results of the most important connections are highlighted in blue throughout the drafting of the paper

From:

MANUSCRIPT BOOK 1 OF SRINIVASA RAMANUJAN



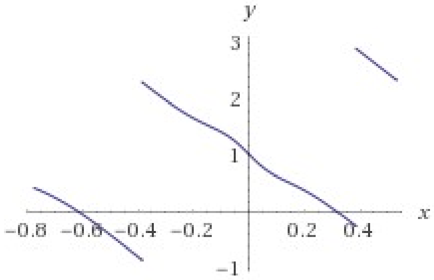
Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9x/(32x^4+2x^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4x/(128x^4+8x^2+1))

Input:

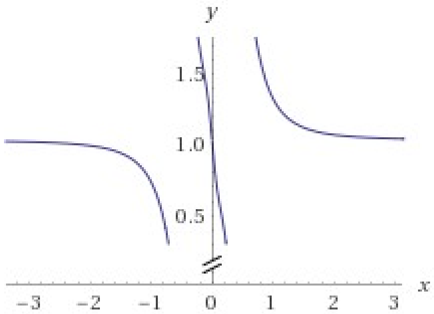
$$\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{x}{32x^4+2x^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(4\times\frac{x}{128x^4+8x^2+1}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Plots:



(x from −0.8 to 0.5)



(x from −3.4 to 3.1)

Alternate forms:

$$\tan^{-1}\left(\frac{9x}{32x^4+2x^2-1}\right)+\tan^{-1}\left(\frac{4x}{128x^4+8x^2+1}\right)+\frac{\pi}{4}+\frac{1}{2}\tan^{-1}\left(\frac{129\,419\,640}{241\,859\,441}\right)$$

$$\frac{1}{4}\left(4\tan^{-1}\left(\frac{9x}{32x^4+2x^2-1}\right)+4\tan^{-1}\left(\frac{4x}{128x^4+8x^2+1}\right)+\pi+4\tan^{-1}\left(\frac{9}{53}\right)+4\tan^{-1}\left(\frac{18}{599}\right)+4\tan^{-1}\left(\frac{4}{137}\right)+4\tan^{-1}\left(\frac{27}{2789}\right)+4\tan^{-1}\left(\frac{8}{1081}\right)+4\tan^{-1}\left(\frac{12}{10441}\right)\right)$$

$$\frac{1}{2}i\log\left(1-\frac{9ix}{32x^4+2x^2-1}\right)-\frac{1}{2}i\log\left(1+\frac{9ix}{32x^4+2x^2-1}\right)+\frac{1}{2}i\log\left(1-\frac{4ix}{128x^4+8x^2+1}\right)-\frac{1}{2}i\log\left(1+\frac{4ix}{128x^4+8x^2+1}\right)+\frac{\pi}{4}-\frac{1}{2}i\log\left(1+\frac{9i}{53}\right)+\frac{1}{2}i\log\left(1-\frac{9i}{53}\right)-\frac{1}{2}i\log\left(1+\frac{18i}{599}\right)+\frac{1}{2}i\log\left(1-\frac{18i}{599}\right)-\frac{1}{2}i\log\left(1+\frac{4i}{137}\right)+\frac{1}{2}i\log\left(1-\frac{4i}{137}\right)-\frac{1}{2}i\log\left(1+\frac{27i}{2789}\right)+\frac{1}{2}i\log\left(1-\frac{27i}{2789}\right)-\frac{1}{2}i\log\left(1+\frac{8i}{1081}\right)+\frac{1}{2}i\log\left(1-\frac{8i}{1081}\right)-\frac{1}{2}i\log\left(1+\frac{12i}{10441}\right)+\frac{1}{2}i\log\left(1-\frac{12i}{10441}\right)$$

$\log(x)$ is the natural logarithm

Series expansion at x = -1/4 - i/4:

$$\left(\left(-\frac{1}{2}i\left(\log\left(x+\left(\frac{1}{4}+\frac{i}{4}\right)\right)-\log(2)+\log(-14+2i)\right)+\tan^{-1}\left(\frac{45}{37}+\frac{63i}{37}\right)+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10441}\right)+\frac{\pi}{4}\right)-\left(\frac{203}{9490}+\frac{30447i}{9490}\right)\left(x+\left(\frac{1}{4}+\frac{i}{4}\right)\right)+O\left(\left(x+\left(\frac{1}{4}+\frac{i}{4}\right)\right)^2\right)\right)+\pi\left\lfloor\frac{-\arg((1-i)((2+2i)x+i))-\arg\left(\frac{(1+i)((32-32i)x^3-16x^2+(6+2i)x-i)}{128x^4+8x^2+1}\right)+\pi}{2\pi}\right\rfloor-\frac{1}{2}i\log\left(-\frac{7}{100}-\frac{i}{100}\right)\left\lfloor\frac{\arg\left(-\frac{i((64+448i)x^4+32ix^3+(12+20i)x^2-(4-2i)x+(1+4i))}{128x^4+8x^2+1}\right)}{2\pi}\right\rfloor-\frac{1}{2}i\log(-14+2i)\left\lfloor\frac{\arg\left(-\frac{i((64+448i)x^4+32ix^3+(12+20i)x^2-(4-2i)x+(1+4i))}{128x^4+8x^2+1}\right)}{2\pi}\right\rfloor$$

Series expansion at x = -1/4 + i/4:

$$\left(\left(\frac{1}{2}\, i\left(\log\left(x+\left(\frac{1}{4}-\frac{i}{4}\right)\right)-\log(2)+\log(-14-2\,i)\right)-\right.\right.$$
$$i\tanh^{-1}\left(\frac{63}{37}+\frac{45\,i}{37}\right)+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{4}{137}\right)+$$
$$\left.\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\frac{\pi}{4}\right)-$$
$$\left.\left(\frac{203}{9490}-\frac{30\,447\,i}{9490}\right)\left(x+\left(\frac{1}{4}-\frac{i}{4}\right)\right)+O\left(\left(x+\left(\frac{1}{4}-\frac{i}{4}\right)\right)^2\right)\right)-$$
$$\pi\left\lfloor\frac{-\arg((1-i)\,((2+2\,i)\,x+1))-\arg\left(\frac{(1+i)\left((32-32\,i)\,x^3+16\,i\,x^2-(2+6\,i)\,x+1\right)}{128\,x^4+8\,x^2+1}\right)+\pi}{2\,\pi}\right\rfloor+$$
$$\frac{1}{2}\,i\log\left(-\frac{7}{100}+\frac{i}{100}\right)\left\lfloor\frac{\arg\left(\frac{(448+64\,i)\,x^4+32\,x^3+(20+12\,i)\,x^2+(2-4\,i)\,x+(4+i)}{128\,x^4+8\,x^2+1}\right)}{2\,\pi}\right\rfloor+$$
$$\frac{1}{2}\,i\log(-14-2\,i)\left\lfloor\frac{\arg\left(\frac{(448+64\,i)\,x^4+32\,x^3+(20+12\,i)\,x^2+(2-4\,i)\,x+(4+i)}{128\,x^4+8\,x^2+1}\right)}{2\,\pi}\right\rfloor$$

Series expansion at x = 0:

$$\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\right.$$
$$\left.\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{9}{53}\right)\right)-5\,x+\frac{515\,x^3}{3}-10\,215\,x^5+O\left(x^6\right)$$

(Taylor series)

Derivative:

$$\frac{d}{dx}\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\,x}{32\,x^4+2\,x^2-1}\right)+\right.$$
$$\left.\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\,x}{128\,x^4+8\,x^2+1}\right)\right)=$$
$$-\frac{5\,(196\,608\,x^{10}+16\,384\,x^8+3584\,x^6+1872\,x^4-10\,x^2+1)}{(16\,x^2+1)\,(64\,x^4+1)\,(1024\,x^8+128\,x^6-60\,x^4+77\,x^2+1)}$$

Indefinite integral:

$$\int\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\,x}{32\,x^4+2\,x^2-1}\right)+\right.$$
$$\left.\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\,x}{128\,x^4+8\,x^2+1}\right)\right)dx=$$
$$9\sum_{\{\omega:\,3\,359\,232\,\omega^4-648\,\omega^2+162\,\omega-1=0\}}\omega\log(x^2+324\,\omega^2)+\frac{1}{8}\log(256\,x^4+4)-$$
$$\frac{1}{4}\log(16\,x^2+1)+\frac{1}{4}\tan^{-1}(8\,x^2)+x\tan^{-1}\left(\frac{9\,x}{32\,x^4+2\,x^2-1}\right)+$$
$$x\tan^{-1}\left(\frac{4\,x}{128\,x^4+8\,x^2+1}\right)+\frac{\pi\,x}{4}+x\tan^{-1}\left(\frac{9}{53}\right)+x\tan^{-1}\left(\frac{18}{599}\right)+x\tan^{-1}\left(\frac{4}{137}\right)+$$
$$x\tan^{-1}\left(\frac{27}{2789}\right)+x\tan^{-1}\left(\frac{8}{1081}\right)+x\tan^{-1}\left(\frac{12}{10\,441}\right)+\text{constant}$$

(assuming a complex-valued logarithm)

For x = 0.11 where 11 is a Lucas number, we obtain:

Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))

Input:

$$\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{0.11}{32\times0.11^4+2\times0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(4\times\frac{0.11}{128\times0.11^4+8\times0.11^2+1}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

0.611731...

(result in radians)

0.611731….

Alternative representations:

$$\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times0.11}{32\times0.11^4+2\times0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times0.11}{128\times0.11^4+8\times0.11^2+1}\right)=\text{sc}^{-1}\left(\frac{9}{53}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{18}{599}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{8}{1081}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{27}{2789}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{12}{10\,441}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{0.99}{-1+2\times0.11^2+32\times0.11^4}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{0.44}{1+8\times0.11^2+128\times0.11^4}\,\middle|\,0\right)+\frac{\pi}{4}$$

$$\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times0.11}{32\times0.11^4+2\times0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times0.11}{128\times0.11^4+8\times0.11^2+1}\right)=\tan^{-1}\left(1,\frac{9}{53}\right)+\tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{18}{599}\right)+\tan^{-1}\left(1,\frac{8}{1081}\right)+\tan^{-1}\left(1,\frac{27}{2789}\right)+\tan^{-1}\left(1,\frac{12}{10\,441}\right)+\tan^{-1}\left(1,\frac{0.99}{-1+2\times0.11^2+32\times0.11^4}\right)+\tan^{-1}\left(1,\frac{0.44}{1+8\times0.11^2+128\times0.11^4}\right)+\frac{\pi}{4}$$

$$\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times 0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times 0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)=$$

$$-i\tanh^{-1}\left(\frac{9i}{53}\right)-i\tanh^{-1}\left(\frac{4i}{137}\right)-i\tanh^{-1}\left(\frac{18i}{599}\right)-i\tanh^{-1}\left(\frac{8i}{1081}\right)-i\tanh^{-1}\left(\frac{27i}{2789}\right)-i\tanh^{-1}\left(\frac{12i}{10441}\right)-i\tanh^{-1}\left(\frac{0.99i}{-1+2\times 0.11^2+32\times 0.11^4}\right)-i\tanh^{-1}\left(\frac{0.44i}{1+8\times 0.11^2+128\times 0.11^4}\right)+\frac{\pi}{4}$$

And:

1/(((Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1)))))

Input:

$$1/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(4\times\frac{0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

1.634705870783905012966653037492510789746664359361913165265...

(result in radians)

1.63470587078….

Alternative representations:

$$1/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times 0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times 0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)=$$

$$1/\left(\text{sc}^{-1}\left(\frac{9}{53}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{18}{599}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{8}{1081}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{27}{2789}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{12}{10\,441}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{0.99}{-1+2\times 0.11^2+32\times 0.11^4}\,\middle|\,0\right)+\text{sc}^{-1}\left(\frac{0.44}{1+8\times 0.11^2+128\times 0.11^4}\,\middle|\,0\right)+\frac{\pi}{4}\right)$$

$$1/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times 0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times 0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)=$$

$$1/\left(\tan^{-1}\left(1,\ \frac{9}{53}\right)+\tan^{-1}\left(1,\ \frac{4}{137}\right)+\tan^{-1}\left(1,\ \frac{18}{599}\right)+\tan^{-1}\left(1,\ \frac{8}{1081}\right)+\tan^{-1}\left(1,\ \frac{27}{2789}\right)+\tan^{-1}\left(1,\ \frac{12}{10\,441}\right)+\tan^{-1}\left(1,\ \frac{0.99}{-1+2\times 0.11^2+32\times 0.11^4}\right)+\tan^{-1}\left(1,\ \frac{0.44}{1+8\times 0.11^2+128\times 0.11^4}\right)+\frac{\pi}{4}\right)$$

$$1/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times 0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(\frac{4\times 0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)=$$

$$1/\left(\cot^{-1}\left(\frac{1}{\frac{9}{53}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{137}}\right)+\cot^{-1}\left(\frac{1}{\frac{18}{599}}\right)+\cot^{-1}\left(\frac{1}{\frac{8}{1081}}\right)+\cot^{-1}\left(\frac{1}{\frac{27}{2789}}\right)+\cot^{-1}\left(\frac{1}{\frac{12}{10\,441}}\right)+\cot^{-1}\left(\frac{1}{\frac{0.99}{-1+2\times 0.11^2+32\times 0.11^4}}\right)+\cot^{-1}\left(\frac{1}{\frac{0.44}{1+8\times 0.11^2+128\times 0.11^4}}\right)+\frac{\pi}{4}\right)$$

Note that:

1/10^52[1.634705870783905 -(55-(2Pi)/3)/10^2]

Input interpretation:

$$\frac{1}{10^{52}}\left(1.634705870783905-\frac{55-\frac{2\pi}{3}}{10^2}\right)$$

Result:

$1.105649821807837... \times 10^{-52}$

1.10564982…*10^{-52} result practically equal to the value of Cosmological Constant 1.1056*10^{-52} m^{-2}

Alternative representations:

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = \frac{1.6347058707839050000 - \frac{55-120\,°}{10^2}}{10^{52}}$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = \frac{1.6347058707839050000 - \frac{55+\frac{2}{3}i\log(-1)}{10^2}}{10^{52}}$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = \frac{1.6347058707839050000 - \frac{55-\frac{2}{3}\cos^{-1}(-1)}{10^2}}{10^{52}}$$

Series representations:

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0847058707839050000\times 10^{-52} + 2.6666666666666666667\times 10^{-54}\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0713725374505716667\times 10^{-52} + 1.3333333333333333333\times 10^{-54}\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0847058707839050000\times 10^{-52} + 6.6666666666666666667\times 10^{-55}\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}$$

Integral representations:

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0847058707839050000\times10^{-52} + 1.3333333333333333333\times10^{-54}\int_0^\infty \frac{1}{1+t^2}\,dt$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0847058707839050000\times10^{-52} + 2.6666666666666666667\times10^{-54}\int_0^1 \sqrt{1-t^2}\,dt$$

$$\frac{1.6347058707839050000 - \frac{55-\frac{2\pi}{3}}{10^2}}{10^{52}} = 1.0847058707839050000\times10^{-52} + 1.3333333333333333333\times10^{-54}\int_0^\infty \frac{\sin(t)}{t}\,dt$$

76*1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))]+1.618

Where 76 is a Lucas number

Input:

$$76\times1\Big/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{0.11}{32\times0.11^4+2\times0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(4\times\frac{0.11}{128\times0.11^4+8\times0.11^2+1}\right)\right)+1.618$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

125.856...

(result in radians)

125.856… result 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

Alternative representations:

$$76 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 1.618 =$$

$$1.618 + 76 \Big/ \left(\mathrm{sc}^{-1}\left(\frac{9}{53} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{4}{137} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{18}{599} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{8}{1081} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{27}{2789} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{12}{10441} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{0.99}{-1 + 2 \times 0.11^2 + 32 \times 0.11^4} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{0.44}{1 + 8 \times 0.11^2 + 128 \times 0.11^4} \,\middle|\, 0\right) + \frac{\pi}{4}\right)$$

$$76 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 1.618 =$$

$$1.618 + 76 \Big/ \left(\tan^{-1}\left(1, \frac{9}{53}\right) + \tan^{-1}\left(1, \frac{4}{137}\right) + \tan^{-1}\left(1, \frac{18}{599}\right) + \tan^{-1}\left(1, \frac{8}{1081}\right) + \tan^{-1}\left(1, \frac{27}{2789}\right) + \tan^{-1}\left(1, \frac{12}{10441}\right) + \tan^{-1}\left(1, \frac{0.99}{-1 + 2 \times 0.11^2 + 32 \times 0.11^4}\right) + \tan^{-1}\left(1, \frac{0.44}{1 + 8 \times 0.11^2 + 128 \times 0.11^4}\right) + \frac{\pi}{4}\right)$$

$$76 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 1.618 =$$

$$1.618 + 76 \Big/ \left(\cot^{-1}\left(\frac{1}{\frac{9}{53}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{137}}\right) + \cot^{-1}\left(\frac{1}{\frac{18}{599}}\right) + \cot^{-1}\left(\frac{1}{\frac{8}{1081}}\right) + \cot^{-1}\left(\frac{1}{\frac{27}{2789}}\right) + \cot^{-1}\left(\frac{1}{\frac{12}{10441}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.99}{-1+2 \times 0.11^2+32 \times 0.11^4}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.44}{1+8 \times 0.11^2+128 \times 0.11^4}}\right) + \frac{\pi}{4}\right)$$

256*1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))]+47

Where 256 = 64 * 4 and 47 is a Lucas number

Input:

$$256\times 1\Big/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10441}\right)+\tan^{-1}\left(4\times\frac{0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)+47$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

465.485...

(result in radians)

465.485… result practically equal to Holographic Dark Energy model, where

$\chi^2_{\mathrm{HDE}} = 465.912.$

Alternative representations:

$$256\Big/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(\frac{9\times 0.11}{32\times 0.11^4+2\times 0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{1081}\right)+\tan^{-1}\left(\frac{12}{10441}\right)+\tan^{-1}\left(\frac{4\times 0.11}{128\times 0.11^4+8\times 0.11^2+1}\right)\right)+47=$$

$$47+256\Big/\left(\mathrm{sc}^{-1}\left(\frac{9}{53}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{18}{599}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{8}{1081}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{27}{2789}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{12}{10441}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{0.99}{-1+2\times 0.11^2+32\times 0.11^4}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{0.44}{1+8\times 0.11^2+128\times 0.11^4}\,\middle|\,0\right)+\frac{\pi}{4}\right)$$

$$256 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10\,441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 47 =$$

$$47 + 256 \Big/ \left(\tan^{-1}\left(1, \frac{9}{53}\right) + \tan^{-1}\left(1, \frac{4}{137}\right) + \tan^{-1}\left(1, \frac{18}{599}\right) + \tan^{-1}\left(1, \frac{8}{1081}\right) + \tan^{-1}\left(1, \frac{27}{2789}\right) + \tan^{-1}\left(1, \frac{12}{10\,441}\right) + \tan^{-1}\left(1, \frac{0.99}{-1 + 2 \times 0.11^2 + 32 \times 0.11^4}\right) + \tan^{-1}\left(1, \frac{0.44}{1 + 8 \times 0.11^2 + 128 \times 0.11^4}\right) + \frac{\pi}{4}\right)$$

$$256 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10\,441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 47 =$$

$$47 + 256 \Big/ \left(\cot^{-1}\left(\frac{1}{\frac{9}{53}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{137}}\right) + \cot^{-1}\left(\frac{1}{\frac{18}{599}}\right) + \cot^{-1}\left(\frac{1}{\frac{8}{1081}}\right) + \cot^{-1}\left(\frac{1}{\frac{27}{2789}}\right) + \cot^{-1}\left(\frac{1}{\frac{12}{10\,441}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.99}{-1+2 \times 0.11^2+32 \times 0.11^4}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.44}{1+8 \times 0.11^2+128 \times 0.11^4}}\right) + \frac{\pi}{4}\right)$$

11*1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))]+0.618

Where 11 is a Lucas number

Input:

$$11 \times 1 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(9 \times \frac{0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10\,441}\right) + \tan^{-1}\left(4 \times \frac{0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 0.618$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

18.5998...

(result in radians)

18.5998… result very near to the black hole entropy 18.7328

Alternative representations:

$$11 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 0.618 = 0.618 + 11 \Big/ \left(\mathrm{sc}^{-1}\left(\frac{9}{53} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{4}{137} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{18}{599} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{8}{1081} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{27}{2789} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{12}{10441} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{0.99}{-1 + 2 \times 0.11^2 + 32 \times 0.11^4} \,\middle|\, 0\right) + \mathrm{sc}^{-1}\left(\frac{0.44}{1 + 8 \times 0.11^2 + 128 \times 0.11^4} \,\middle|\, 0\right) + \frac{\pi}{4}\right)$$

$$11 \Big/ \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 0.618 = 0.618 + 11 \Big/ \left(\tan^{-1}\left(1, \frac{9}{53}\right) + \tan^{-1}\left(1, \frac{4}{137}\right) + \tan^{-1}\left(1, \frac{18}{599}\right) + \tan^{-1}\left(1, \frac{8}{1081}\right) + \tan^{-1}\left(1, \frac{27}{2789}\right) + \tan^{-1}\left(1, \frac{12}{10441}\right) + \tan^{-1}\left(1, \frac{0.99}{-1 + 2 \times 0.11^2 + 32 \times 0.11^4}\right) + \tan^{-1}\left(1, \frac{0.44}{1 + 8 \times 0.11^2 + 128 \times 0.11^4}\right) + \frac{\pi}{4}\right)$$

$$11 / \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(\frac{9 \times 0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(\frac{4 \times 0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) + 0.618 =$$

$$0.618 + 11 / \left(\cot^{-1}\left(\frac{1}{\frac{9}{53}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{137}}\right) + \cot^{-1}\left(\frac{1}{\frac{18}{599}}\right) + \cot^{-1}\left(\frac{1}{\frac{8}{1081}}\right) + \cot^{-1}\left(\frac{1}{\frac{27}{2789}}\right) + \cot^{-1}\left(\frac{1}{\frac{12}{10441}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.99}{-1+2 \times 0.11^2+32 \times 0.11^4}}\right) + \cot^{-1}\left(\frac{1}{\frac{0.44}{1+8 \times 0.11^2+128 \times 0.11^4}}\right) + \frac{\pi}{4}\right)$$

We have also that:

1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/x) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))] = 1.63471

Input interpretation:

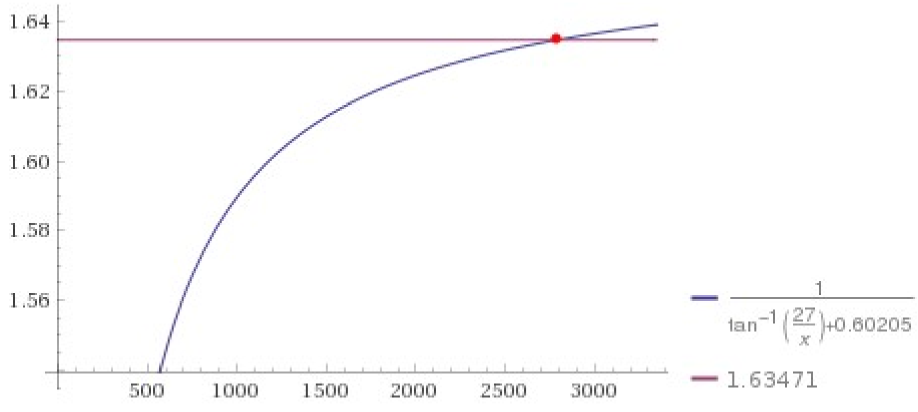
$$1 / \left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{x}\right) + \tan^{-1}\left(9 \times \frac{0.11}{32 \times 0.11^4 + 2 \times 0.11^2 - 1}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10441}\right) + \tan^{-1}\left(4 \times \frac{0.11}{128 \times 0.11^4 + 8 \times 0.11^2 + 1}\right)\right) = 1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right) + 0.60205} = 1.63471$$

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right)+0.60205}=1.63471$$

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right)+0.60205}=1.63471$$

$$\frac{1}{0.60205+\frac{1}{2}\,i\left(\log\left(1-\frac{27\,i}{x}\right)-\log\left(1+\frac{27\,i}{x}\right)\right)}=1.63471$$

$\log(x)$ is the natural logarithm

Alternate form assuming x is positive:

$$\tan^{-1}\left(\frac{27}{x}\right)=0.00967904$$

Solution:

$x \approx 2789.45$

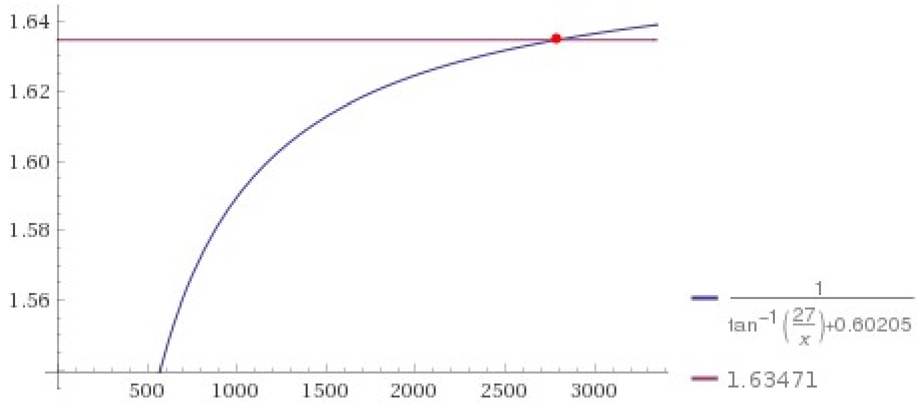
1/(tan^-1(27/x) + 0.60205) = 1.63471

Input interpretation:

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right)+0.60205}=1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right)+0.60205}=1.63471$$

$$\frac{1}{\tan^{-1}\left(\frac{27}{x}\right) + 0.60205} = 1.63471$$

$$\frac{1}{0.60205 + \frac{1}{2} i \left(\log\left(1 - \frac{27 i}{x}\right) - \log\left(1 + \frac{27 i}{x}\right)\right)} = 1.63471$$

log(x) is the natural logarithm

Alternate form assuming x is positive:

$$\tan^{-1}\left(\frac{27}{x}\right) = 0.0096793$$

Solution:

$$x = 27 \cot\left(\frac{31645689}{3269420000}\right)$$

cot(x) is the cotangent function

From which, adding 24, we obtain:

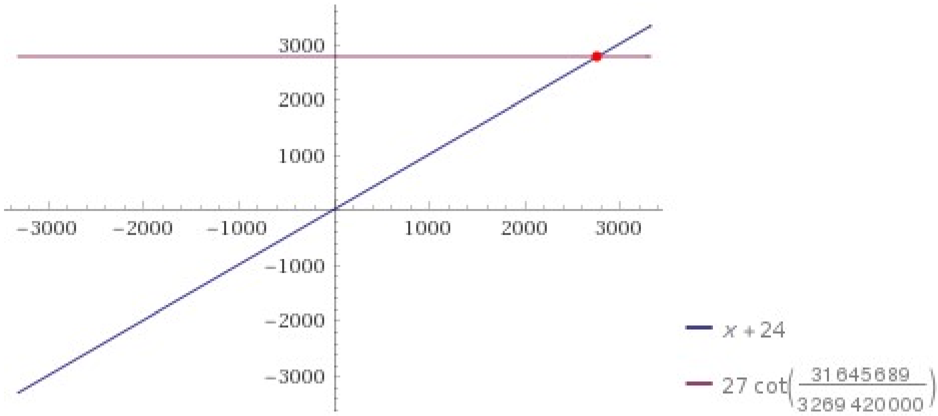
x+24 = 27 cot(31645689/3269420000)

Input:

$$x + 24 = 27 \cot\left(\frac{31645689}{3269420000}\right)$$

cot(x) is the cotangent function

Plot:



Alternate forms:

$$x + 24 - 27 \cot\left(\frac{31645689}{3269420000}\right) = 0$$

$$24 + x = \frac{27 \cos\left(\frac{31645689}{3269420000}\right)}{\sin\left(\frac{31645689}{3269420000}\right)}$$

$$x + 24 = -\frac{27\, i\left(e^{-(31645689\, i)/3269420000} + e^{(31645689\, i)/3269420000}\right)}{e^{-(31645689\, i)/3269420000} - e^{(31645689\, i)/3269420000}}$$

Alternate form assuming x is real:

$$x + 24 = -\frac{27 \sin\left(\frac{31645689}{1634710000}\right)}{\cos\left(\frac{31645689}{1634710000}\right) - 1}$$

Solution:

$$x = 3\left(9 \cot\left(\frac{31645689}{3269420000}\right) - 8\right)$$

Thence:

Input:

$$3\left(9 \cot\left(\frac{31645689}{3269420000}\right) - 8\right)$$

cot(x) is the cotangent function

Decimal approximation:

2765.371506824226811637033683431408791071909141949631009922...

2765.3715068…. result practically equal t othe rest mass of charmed Omega baryon 2765.9

Property:

$3\left(-8 + 9 \cot\left(\frac{31645689}{3269420000}\right)\right)$ is a transcendental number

Alternate forms:

$$27 \cot\left(\frac{31645689}{3269420000}\right) - 24$$

$$-24 - \frac{27 \sin\left(\frac{31645689}{1634710000}\right)}{\cos\left(\frac{31645689}{1634710000}\right) - 1}$$

$$3\left(-8 + \frac{9 \cos\left(\frac{31645689}{3269420000}\right)}{\sin\left(\frac{31645689}{3269420000}\right)}\right)$$

Alternative representations:

$$3\left(9 \cot\left(\frac{31645689}{3269420000}\right) - 8\right) = 3\left(-8 + 9\, i \coth\left(\frac{31645689\, i}{3269420000}\right)\right)$$

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=3\left(-8+\frac{9}{\tan\left(\frac{31645689}{3269420000}\right)}\right)$$

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=3\left(-8-9\,i\coth\left(-\frac{31645689\,i}{3269420000}\right)\right)$$

Series representations:

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=-24+2793502310320260000\sum_{k=-\infty}^{\infty}\frac{1}{1001449632284721-10689107136400000000\,k^2\,\pi^2}$$

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=(-24-27\,i)-54\,i\sum_{k=1}^{\infty}q^{2k}\quad\text{for } q=e^{(31645689\,i)/3269420000}$$

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=-24-27\,i\sum_{k=-\infty}^{\infty}e^{(31645689\,i\,k)/1634710000}\,\operatorname{sgn}(k)$$

Integral representations:

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=-24-27\int_{\frac{\pi}{2}}^{\frac{31645689}{3269420000}}\csc^2(t)\,dt$$

$$3\left(9\cot\left(\frac{31645689}{3269420000}\right)-8\right)=-24+\frac{54}{\pi}\int_0^{\infty}\frac{-1+t^{1-31645689/(1634710000\,\pi)}}{-1+t^2}\,dt$$

We have also:

x+(843+199+18) = 27 cot(31645689/3269420000)

where 843, 199 and 18 are Lucas numbers

Input:

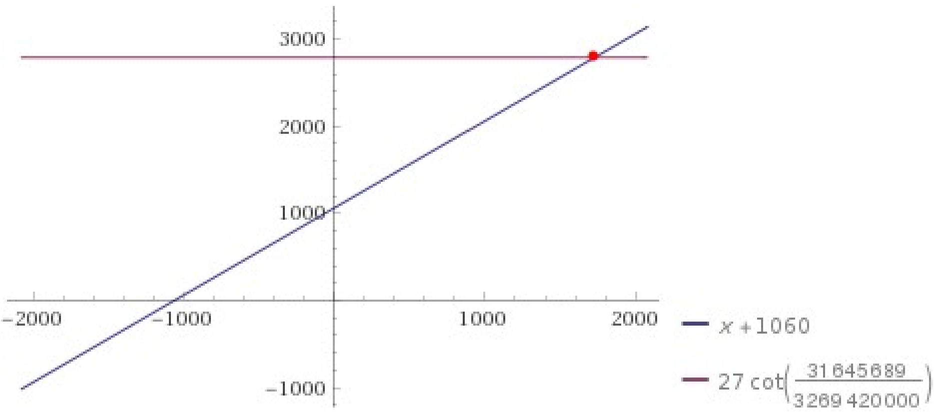
$$x+(843+199+18)=27\cot\left(\frac{31645689}{3269420000}\right)$$

cot(x) is the cotangent function

Exact result:

$$x+1060=27\cot\left(\frac{31645689}{3269420000}\right)$$

Plot:



Alternate forms:

$$x + 1060 - 27 \cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right) = 0$$

$$1060 + x = \frac{27 \cos\left(\frac{31\,645\,689}{3\,269\,420\,000}\right)}{\sin\left(\frac{31\,645\,689}{3\,269\,420\,000}\right)}$$

$$x + 1060 = -\frac{27\, i \left(e^{-(31\,645\,689\, i)/3\,269\,420\,000} + e^{(31\,645\,689\, i)/3\,269\,420\,000}\right)}{e^{-(31\,645\,689\, i)/3\,269\,420\,000} - e^{(31\,645\,689\, i)/3\,269\,420\,000}}$$

Alternate form assuming x is real:

$$x + 1060 = -\frac{27 \sin\left(\frac{31\,645\,689}{1\,634\,710\,000}\right)}{\cos\left(\frac{31\,645\,689}{1\,634\,710\,000}\right) - 1}$$

Solution:

$$x = 27 \cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right) - 1060$$

Thence:

Input:

$$-1060 + 27 \cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right)$$

cot(x) is the cotangent function

Decimal approximation:

1729.3715068242268116370336834314087910719091419496310099 22...

1729.37150…

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

Property:

$-1060+27\cot\left(\frac{31645689}{3269420000}\right)$ is a transcendental number

Alternate forms:

$$-1060+\frac{27\cos\left(\frac{31645689}{3269420000}\right)}{\sin\left(\frac{31645689}{3269420000}\right)}$$

$$-1060-\frac{27\sin\left(\frac{31645689}{1634710000}\right)}{\cos\left(\frac{31645689}{1634710000}\right)-1}$$

$$\csc\left(\frac{31645689}{3269420000}\right)\left(27\cos\left(\frac{31645689}{3269420000}\right)-1060\sin\left(\frac{31645689}{3269420000}\right)\right)$$

$\csc(x)$ is the cosecant function

Alternative representations:

$$-1060+27\cot\left(\frac{31645689}{3269420000}\right)=-1060+27\,i\coth\left(\frac{31645689\,i}{3269420000}\right)$$

$$-1060+27\cot\left(\frac{31645689}{3269420000}\right)=-1060+\frac{27}{\tan\left(\frac{31645689}{3269420000}\right)}$$

$$-1060+27\cot\left(\frac{31645689}{3269420000}\right)=-1060-27\,i\coth\left(-\frac{31645689\,i}{3269420000}\right)$$

Series representations:

$$-1060+27\cot\left(\frac{31645689}{3269420000}\right)=-1060+2793502310320260000\sum_{k=-\infty}^{\infty}\frac{1}{1001449632284721-10689107136400000000\,k^2\,\pi^2}$$

$$-1060+27\cot\left(\frac{31645689}{3269420000}\right)=(-1060-27\,i)-54\,i\sum_{k=1}^{\infty}q^{2k}$$

for $q=e^{(31645689\,i)/3269420000}$

$$-1060 + 27\cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right) = -1060 - 27\,i \sum_{k=-\infty}^{\infty} e^{(31\,645\,689\,i\,k)/1\,634\,710\,000}\ \mathrm{sgn}(k)$$

Integral representations:

$$-1060 + 27\cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right) = -1060 - 27 \int_{\frac{\pi}{2}}^{\frac{31\,645\,689}{3\,269\,420\,000}} \csc^2(t)\,dt$$

$$-1060 + 27\cot\left(\frac{31\,645\,689}{3\,269\,420\,000}\right) = -1060 + \frac{54}{\pi}\int_0^{\infty} \frac{-1 + t^{1-31\,645\,689/(1\,634\,710\,000\,\pi)}}{-1+t^2}\,dt$$

We have also:

1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/x) + tan^-1(8/1081) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))] = 1.63471

Input interpretation:

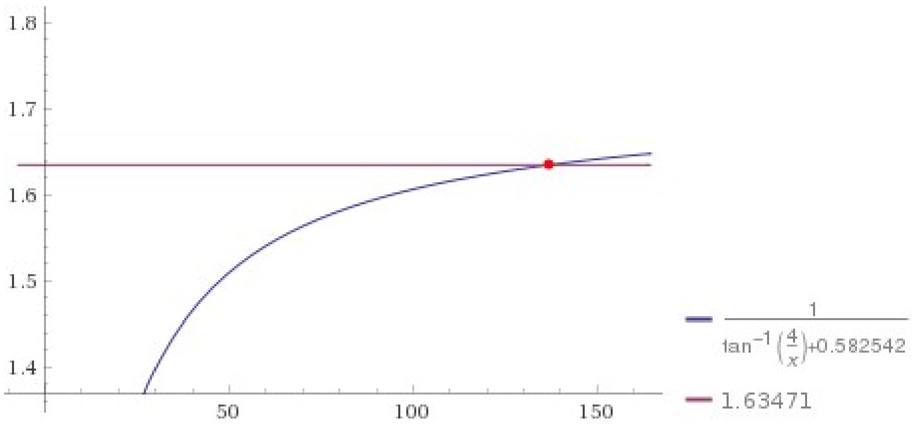
$$1\Big/\left(\frac{\pi}{4} + \tan^{-1}\left(\frac{9}{53}\right) + \tan^{-1}\left(\frac{18}{599}\right) + \tan^{-1}\left(\frac{27}{2789}\right) + \tan^{-1}\left(9\times\frac{0.11}{32\times0.11^4+2\times0.11^2-1}\right) + \tan^{-1}\left(\frac{4}{x}\right) + \tan^{-1}\left(\frac{8}{1081}\right) + \tan^{-1}\left(\frac{12}{10\,441}\right) + \tan^{-1}\left(4\times\frac{0.11}{128\times0.11^4+8\times0.11^2+1}\right)\right) = 1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

$$\frac{1}{\tan^{-1}\left(\frac{4}{x}\right) + 0.582542} = 1.63471$$

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{4}{x}\right)+0.582542} = 1.63471$$

$$\frac{1}{0.582542+\frac{1}{2}\,i\left(\log\left(1-\frac{4\,i}{x}\right)-\log\left(1+\frac{4\,i}{x}\right)\right)} = 1.63471$$

log(x) is the natural logarithm

Alternate form assuming x is positive:

$$\tan^{-1}\left(\frac{4}{x}\right) = 0.0291872$$

Solution:

$x \approx 137.007$

137.007

This result is practically equal to the inverse of fine-structure constant 137,035

from which:

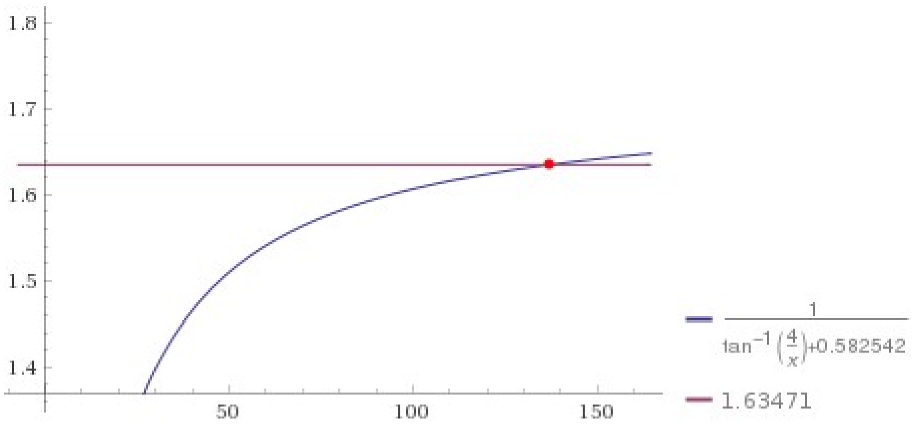
$$\frac{1}{\tan^{-1}\left(\frac{4}{x}\right)+0.582542} = 1.63471$$

Input interpretation:

$$\frac{1}{\tan^{-1}\left(\frac{4}{x}\right)+0.582542} = 1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{4}{x}\right)+0.582542} = 1.63471$$

$$\frac{1}{0.582542+\frac{1}{2}\,i\left(\log\left(1-\frac{4\,i}{x}\right)-\log\left(1+\frac{4\,i}{x}\right)\right)} = 1.63471$$

log(x) is the natural logarithm

Alternate form assuming x is positive:

$$\tan^{-1}\left(\frac{4}{x}\right) = 0.0291873$$

Solution:

$$x = 4\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)$$

cot(x) is the cotangent function

x-golden ratio^2 = 4 cot(2385638359/81735500000)

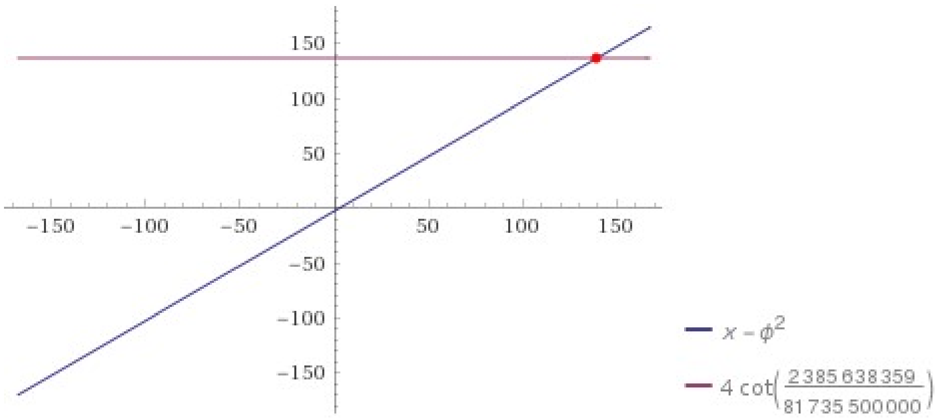
Input:

$$x-\phi^2 = 4\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)$$

cot(x) is the cotangent function

ϕ is the golden ratio

Plot:



Alternate forms:

$$x-\phi^2-4\cot\left(\frac{2385638359}{81735500000}\right)=0$$

$$-\phi^2+x=\frac{4\cos\left(\frac{2385638359}{81735500000}\right)}{\sin\left(\frac{2385638359}{81735500000}\right)}$$

$$x+\frac{1}{2}\left(-3-\sqrt{5}\right)=4\cot\left(\frac{2385638359}{81735500000}\right)$$

Alternate form assuming x is real:

$$x-\phi^2=-\frac{4\sin\left(\frac{2385638359}{40867750000}\right)}{\cos\left(\frac{2385638359}{40867750000}\right)-1}$$

Solution:

$$x=\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2385638359}{81735500000}\right)\right)$$

Input:

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2385638359}{81735500000}\right)\right)$$

cot(x) is the cotangent function

Decimal approximation:

139.62503383219046877971614778825139042883032216591133608 24...

139.6250338…. result practically equal to the rest mass of Pion meson 139.57 MeV

Property:

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)\text{ is a transcendental number}$$

Alternate forms:

$$\frac{3}{2}+\frac{\sqrt{5}}{2}+4\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)$$

$$\frac{1}{2}\left(3+\sqrt{5}\right)+4\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)$$

$$\frac{1}{2}\left(3+\sqrt{5}+\frac{8\cos\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)}{\sin\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)}\right)$$

Alternative representations:

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{1}{2}\left(3+8\,i\coth\left(\frac{2\,385\,638\,359\,i}{81\,735\,500\,000}\right)+\sqrt{5}\right)$$

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{1}{2}\left(3+\frac{8}{\tan\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)}+\sqrt{5}\right)$$

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{1}{2}\left(3+\sqrt{5}-8\tan\left(\frac{\pi}{2}+\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)$$

Series representations:

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{3}{2}+\frac{\sqrt{5}}{2}+779\,965\,376\,368\,178\,000\,000\sum_{k=-\infty}^{\infty}\frac{1}{5\,691\,270\,379\,932\,212\,881-6\,680\,691\,960\,250\,000\,000\,000\,k^2\,\pi^2}$$

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\left(\frac{3}{2}-4\,i\right)+\frac{\sqrt{5}}{2}-8\,i\sum_{k=1}^{\infty}q^{2k}$$

for $q=e^{(2\,385\,638\,359\,i)/81\,735\,500\,000}$

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{3}{2}+\frac{\sqrt{5}}{2}-4\,i\sum_{k=-\infty}^{\infty}e^{(2\,385\,638\,359\,i\,k)/40\,867\,750\,000}\,\text{sgn}(k)$$

Integral representations:

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=\frac{3}{2}+\frac{\sqrt{5}}{2}-4\int_{\frac{\pi}{2}}^{\frac{2\,385\,638\,359}{81\,735\,500\,000}}\csc^2(t)\,dt$$

$$\frac{1}{2}\left(3+\sqrt{5}+8\cot\left(\frac{2\,385\,638\,359}{81\,735\,500\,000}\right)\right)=$$
$$\frac{3}{2}+\frac{\sqrt{5}}{2}+\frac{8}{\pi}\int_0^\infty \frac{-1+t^{1-2\,385\,638\,359/(40\,867\,750\,000\,\pi)}}{-1+t^2}\,dt$$

We have also:

1/[Pi/4 + tan^-1(9/53) + tan^-1(18/599) + tan^-1(27/2789) + tan^-1(9*0.11/(32*0.11^4+2*0.11^2-1)) + tan^-1(4/137) + tan^-1(8/x) + tan^-1(12/10441) + tan^-1(4*0.11/(128*0.11^4+8*0.11^2+1))] = 1.63471

Input interpretation:

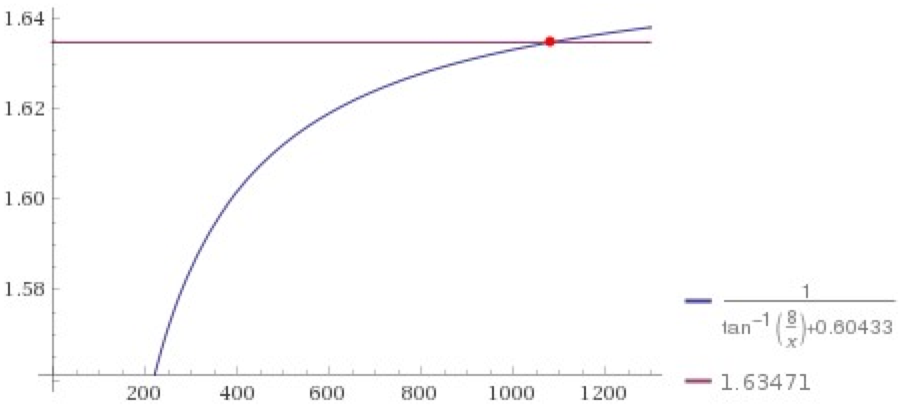
$$1\Big/\left(\frac{\pi}{4}+\tan^{-1}\left(\frac{9}{53}\right)+\tan^{-1}\left(\frac{18}{599}\right)+\tan^{-1}\left(\frac{27}{2789}\right)+\tan^{-1}\left(9\times\frac{0.11}{32\times0.11^4+2\times0.11^2-1}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{8}{x}\right)+\tan^{-1}\left(\frac{12}{10\,441}\right)+\tan^{-1}\left(4\times\frac{0.11}{128\times0.11^4+8\times0.11^2+1}\right)\right)=1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Result:

$$\frac{1}{\tan^{-1}\left(\frac{8}{x}\right)+0.60433}=1.63471$$

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{8}{x}\right)+0.60433}=1.63471$$

$$\frac{1}{0.60433+\frac{1}{2}\,i\left(\log\left(1-\frac{8i}{x}\right)-\log\left(1+\frac{8i}{x}\right)\right)}=1.63471$$

$\log(x)$ is the natural logarithm

Alternate form assuming x is positive:

$\tan^{-1}\left(\frac{8}{x}\right) = 0.00739887$

Solution:

$x \approx 1081.23$

1081.23

From:

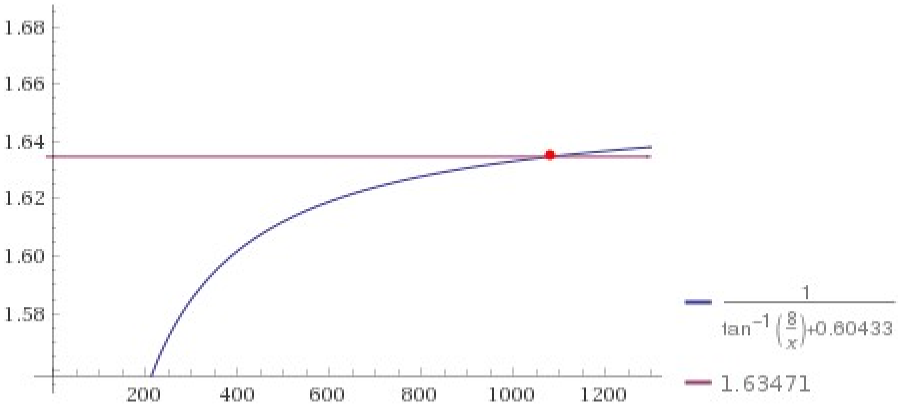
$$\frac{1}{\tan^{-1}\left(\frac{8}{x}\right) + 0.60433} = 1.63471$$

Input interpretation:

$$\frac{1}{\tan^{-1}\left(\frac{8}{x}\right) + 0.60433} = 1.63471$$

$\tan^{-1}(x)$ is the inverse tangent function

Plot:



Alternate forms:

$$\frac{1}{\tan^{-1}\left(\frac{8}{x}\right) + 0.60433} = 1.63471$$

$$\frac{1}{0.60433 + \frac{1}{2} i \left(\log\left(1 - \frac{8i}{x}\right) - \log\left(1 + \frac{8i}{x}\right)\right)} = 1.63471$$

$\log(x)$ is the natural logarithm

Alternate form assuming x is positive:

$\tan^{-1}\left(\frac{8}{x}\right) = 0.0073993$

Solution:

$$x = 8\cot\left(\frac{120957057}{16347100000}\right)$$

We obtain:

x+123 = 8 cot(120957057/16347100000)

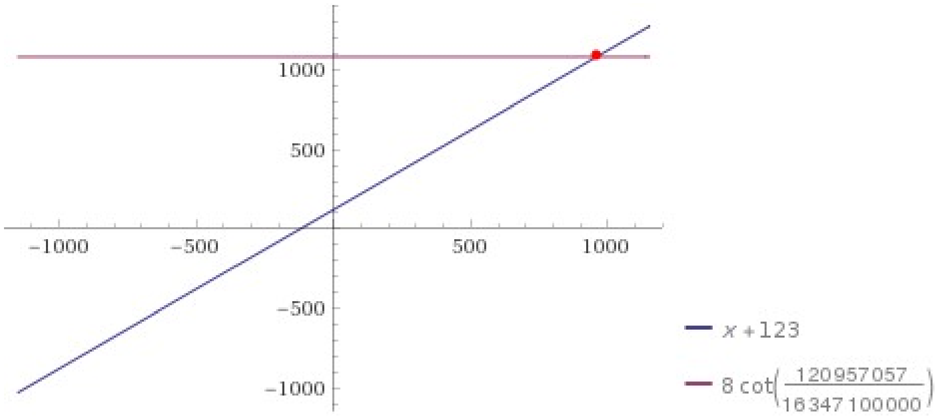
where 123 is a Lucas number

Input:

$$x + 123 = 8\cot\left(\frac{120957057}{16347100000}\right)$$

cot(x) is the cotangent function

Plot:



Alternate forms:

$$x + 123 - 8\cot\left(\frac{120957057}{16347100000}\right) = 0$$

$$123 + x = \frac{8\cos\left(\frac{120957057}{16347100000}\right)}{\sin\left(\frac{120957057}{16347100000}\right)}$$

$$x + 123 = -\frac{8\,i\left(e^{-(120957057\,i)/16347100000} + e^{(120957057\,i)/16347100000}\right)}{e^{-(120957057\,i)/16347100000} - e^{(120957057\,i)/16347100000}}$$

Alternate form assuming x is real:

$$x+123=-\frac{8\sin\left(\frac{120957057}{8173550000}\right)}{\cos\left(\frac{120957057}{8173550000}\right)-1}$$

Solution:

$$x=8\cot\left(\frac{120957057}{16347100000}\right)-123$$

Input:

$$-123+8\cot\left(\frac{120957057}{16347100000}\right)$$

$\cot(x)$ is the cotangent function

Decimal approximation:

958.1639814611252295295671175801459252366435971826491007061...

958.16398146… result very near to the rest mass of Eta prime meson 957.66

Property:

$-123+8\cot\left(\frac{120957057}{16347100000}\right)$ is a transcendental number

Alternate forms:

$$-123+\frac{8\cos\left(\frac{120957057}{16347100000}\right)}{\sin\left(\frac{120957057}{16347100000}\right)}$$

$$-123-\frac{8\sin\left(\frac{120957057}{8173550000}\right)}{\cos\left(\frac{120957057}{8173550000}\right)-1}$$

$$\csc\left(\frac{120957057}{16347100000}\right)\left(8\cos\left(\frac{120957057}{16347100000}\right)-123\sin\left(\frac{120957057}{16347100000}\right)\right)$$

$\csc(x)$ is the cosecant function

Alternative representations:

$$-123+8\cot\left(\frac{120957057}{16347100000}\right)=-123+8\,i\coth\left(\frac{120957057\,i}{16347100000}\right)$$

$$-123+8\cot\left(\frac{120957057}{16347100000}\right)=-123+\frac{8}{\tan\left(\frac{120957057}{16347100000}\right)}$$

$$-123+8\cot\left(\frac{120957057}{16347100000}\right)=-123-8\,i\coth\left(-\frac{120957057\,i}{16347100000}\right)$$

Series representations:

$$-123+8\cot\left(\frac{120\,957\,057}{16\,347\,100\,000}\right) = -123+15\,818\,376\,851\,877\,600\,000 \sum_{k=-\infty}^{\infty} \frac{1}{14\,630\,609\,638\,101\,249-267\,227\,678\,410\,000\,000\,000\,k^2\,\pi^2}$$

$$-123+8\cot\left(\frac{120\,957\,057}{16\,347\,100\,000}\right) = (-123-8\,i)-16\,i\sum_{k=1}^{\infty} q^{2k}$$

for $q = e^{(120\,957\,057\,i)/16\,347\,100\,000}$

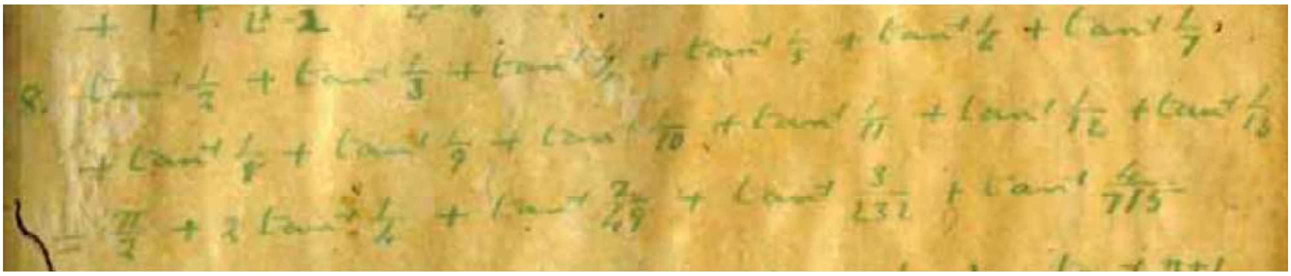
$$-123+8\cot\left(\frac{120\,957\,057}{16\,347\,100\,000}\right) = -123-8\,i\sum_{k=-\infty}^{\infty} e^{(120\,957\,057\,i\,k)/8\,173\,550\,000}\,\operatorname{sgn}(k)$$

Integral representations:

$$-123+8\cot\left(\frac{120\,957\,057}{16\,347\,100\,000}\right) = -123-8\int_{\frac{\pi}{2}}^{\frac{120\,957\,057}{16\,347\,100\,000}} \csc^2(t)\,dt$$

$$-123+8\cot\left(\frac{120\,957\,057}{16\,347\,100\,000}\right) = -123+\frac{16}{\pi}\int_0^{\infty} \frac{-1+t^{1-120\,957\,057/(8\,173\,550\,000\,\pi)}}{-1+t^2}\,dt$$

Page 14



Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715)

Input:

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$\frac{\pi}{2} + \tan^{-1}\left(\frac{4}{715}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{2}{49}\right) + 2\tan^{-1}\left(\frac{1}{4}\right)$$

(result in radians)

Decimal approximation:

2.120071996963767474857090963331024507872720014604534384095...

(result in radians)

2.1200719969…

Alternate forms:

$$\frac{1}{2}\left(\pi + \tan^{-1}\left(\frac{1\,206\,876\,324}{616\,464\,443}\right)\right)$$

$$\frac{\pi}{2} + \frac{1}{2}\tan^{-1}\left(\frac{1\,206\,876\,324}{616\,464\,443}\right)$$

$$\frac{1}{2}\left(\pi + 2\left(\tan^{-1}\left(\frac{4}{715}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{2}{49}\right) + 2\tan^{-1}\left(\frac{1}{4}\right)\right)\right)$$

Alternative representations:

$$\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right) = \frac{\pi}{2} + 2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)$$

$$\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right) = \frac{\pi}{2} + 2\tan^{-1}\left(1, \frac{1}{4}\right) + \tan^{-1}\left(1, \frac{2}{49}\right) + \tan^{-1}\left(1, \frac{3}{232}\right) + \tan^{-1}\left(1, \frac{4}{715}\right)$$

$$\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right) = \frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right) + \cot^{-1}\left(\frac{1}{\frac{2}{49}}\right) + \cot^{-1}\left(\frac{1}{\frac{3}{232}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)$$

Series representations:

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)= \frac{\pi}{2}+\sum_{k=0}^{\infty}\left(\frac{(-1)^k\, 2^{-1-4k}}{1+2k}+\frac{(-1)^k\, 2^{1+2k}\times 49^{-1-2k}}{1+2k}+\frac{(-1)^k\, 3^{1+2k}\times 232^{-1-2k}}{1+2k}+\frac{(-1)^k\, 4^{1+2k}\times 715^{-1-2k}}{1+2k}\right)$$

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)= \frac{\pi}{2}-\frac{1}{2}\,i\log\left(1+\frac{4i}{715}\right)-\frac{1}{2}\,i\log\left(1+\frac{3i}{232}\right)-\frac{1}{2}\,i\log\left(1+\frac{2i}{49}\right)-i\log\left(1+\frac{i}{4}\right)+\frac{5}{2}\,i\log(2)+\sum_{k=1}^{\infty}-\frac{i\,2^{-1-3k}\left(\left(4+\frac{16i}{715}\right)^k+\left(4+\frac{3i}{58}\right)^k+\left(4+\frac{8i}{49}\right)^k+2\,(4+i)^k\right)}{k}$$

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)= \frac{\pi}{2}+5\tan^{-1}(z_0)+\sum_{k=1}^{\infty}\frac{1}{2k}\,i\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{4}{715}-z_0\right)^k+\left(\frac{3}{232}-z_0\right)^k+\left(\frac{2}{49}-z_0\right)^k+2\left(\frac{1}{4}-z_0\right)^k\right)(-i-z_0)^{-k}\,(i-z_0)^{-k}$$

for $(i z_0 \notin \mathbb{R}$ or (not $(1 \le i z_0 < \infty)$ and not $(-\infty < i z_0 \le -1)))$

Integral representations:

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)= \frac{\pi}{2}+\int_0^1\left(\frac{8}{16+t^2}+\frac{98}{2401+4t^2}+\frac{696}{53\,824+9t^2}+\frac{2860}{511\,225+16t^2}\right)dt$$

$$\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)= \frac{\pi}{2}+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-3+4s}\times 17^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,49^{-1+2s}\times 2405^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{3\,i\,2^{-5+6s}\times 29^{-1+2s}\times 53\,833^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,715^{-1+2s}\times 511\,241^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right) =$$

$$\frac{\pi}{2} + \int_{-i\infty+\gamma}^{i\infty+\gamma} \left(-\frac{i\,2^{-3+4s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\left(\frac{3}{29}\right)^{1-2s} 2^{-5+6s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-1-2s}\times 49^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-s}\times 715^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} \right) ds \quad \text{for } 0 < \gamma < \frac{1}{2}$$

Continued fraction:

$$2 + \cfrac{1}{8 + \cfrac{1}{3 + \cfrac{1}{21 + \cfrac{1}{1 + \cfrac{1}{9 + \cfrac{1}{3 + \cfrac{1}{15 + \cfrac{1}{2 + \cfrac{1}{1 + \cfrac{1}{15 + \cfrac{1}{9 + \cfrac{1}{8 + \cfrac{1}{1 + \cfrac{1}{865 + \cfrac{1}{4 + \cfrac{1}{1 + \cfrac{1}{6 + \cfrac{1}{8 + \cfrac{1}{1 + \cfrac{1}{9 + \cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}$$

64(((Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715))))-11+1/golden ratio

Where 11 is a Lucas number

Input:

$$64\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) - 11 + \frac{1}{\phi}$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$\frac{1}{\phi} - 11 + 64\left(\frac{\pi}{2} + \tan^{-1}\left(\frac{4}{715}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{2}{49}\right) + 2\tan^{-1}\left(\frac{1}{4}\right)\right)$$

(result in radians)

Decimal approximation:

125.3026417944310132390584084875512066215743901144959634442...

(result in radians)

125.302641794… result 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

Alternate forms:

$$\frac{1}{\phi} - 11 + 32\left(\pi + \tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$-11 + \frac{2}{1+\sqrt{5}} + 64\left(\frac{\pi}{2} + \frac{1}{2}\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$\frac{1}{\phi} - 11 + 32\pi + 64\tan^{-1}\left(\frac{4}{715}\right) + 64\tan^{-1}\left(\frac{3}{232}\right) + 64\tan^{-1}\left(\frac{2}{49}\right) + 128\tan^{-1}\left(\frac{1}{4}\right)$$

Alternative representations:

$$64\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) - 11 + \frac{1}{\phi} = -11 + 64\left(\frac{\pi}{2} + 2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)\right) + \frac{1}{\phi}$$

$$64\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) - 11 + \frac{1}{\phi} = -11 + 64\left(\frac{\pi}{2} + 2\tan^{-1}\left(1, \frac{1}{4}\right) + \tan^{-1}\left(1, \frac{2}{49}\right) + \tan^{-1}\left(1, \frac{3}{232}\right) + \tan^{-1}\left(1, \frac{4}{715}\right)\right) + \frac{1}{\phi}$$

$$64\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) - 11 + \frac{1}{\phi} = -11 + 64\left(\frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right) + \cot^{-1}\left(\frac{1}{\frac{2}{49}}\right) + \cot^{-1}\left(\frac{1}{\frac{3}{232}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)\right) + \frac{1}{\phi}$$

Series representations:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$
$$-11+\frac{1}{\phi}+32\pi+\sum_{k=0}^{\infty}\left(\frac{(-1)^k\,2^{5-4k}}{1+2k}+64\left(\frac{(-1)^k\,2^{1+2k}\times 49^{-1-2k}}{1+2k}+\frac{(-1)^k\,3^{1+2k}\times 232^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 715^{-1-2k}}{1+2k}\right)\right)$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$
$$-11+\frac{1}{\phi}+32\pi-32\,i\log\left(1+\frac{4\,i}{715}\right)-32\,i\log\left(1+\frac{3\,i}{232}\right)-32\,i\log\left(1+\frac{2\,i}{49}\right)-64\,i\log\left(1+\frac{i}{4}\right)+160\,i\log(2)+\sum_{k=1}^{\infty}-\frac{i\,2^{5-4k}\left(2^{1+k}\,(4+i)^k+\left(8+\frac{32\,i}{715}\right)^k+\left(8+\frac{3\,i}{29}\right)^k+\left(8+\frac{16\,i}{49}\right)^k\right)}{k}$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$
$$-11+\frac{1}{\phi}+32\pi+320\tan^{-1}(z_0)+\sum_{k=1}^{\infty}\frac{1}{k}32\,i\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{4}{715}-z_0\right)^k+\left(\frac{3}{232}-z_0\right)^k+\left(\frac{2}{49}-z_0\right)^k+2\left(\frac{1}{4}-z_0\right)^k\right)(-i-z_0)^{-k}\,(i-z_0)^{-k}$$
$$\text{for } (i\,z_0\notin\mathbb{R} \text{ or } (\text{ not } (1\le i\,z_0<\infty) \text{ and } \text{ not } (-\infty<i\,z_0\le-1)))$$

Integral representations:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$
$$-11+\frac{1}{\phi}+32\pi+\int_0^1 128\left(\frac{4}{16+t^2}+\frac{49}{2401+4\,t^2}+\frac{348}{53\,824+9\,t^2}+\frac{1430}{511\,225+16\,t^2}\right)dt$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$
$$-11+\frac{2}{1+\sqrt{5}}+32\pi+\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\left(-\frac{i\,2^{3+4s}\times 17^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{32\,i\,49^{-1+2s}\times 2405^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{3\,i\,2^{1+6s}\times 29^{-1+2s}\times 53\,833^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{64\,i\,715^{-1+2s}\times 511\,241^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)-11+\frac{1}{\phi}=$$

$$-11+\frac{1}{\phi}+32\pi+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{3+4s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\left(\frac{3}{29}\right)^{1-2s}2^{1+6s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{5-2s}\times 49^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,4^{3-2s}\times 715^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

Continued fraction:

$$125+\cfrac{1}{3+\cfrac{1}{3+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{16+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{17+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{12+\cfrac{1}{1+\cfrac{1}{8+\cfrac{1}{7+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}}$$

64(((Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715))))+4

Where 4 is a Lucas number

Input:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$4+64\left(\frac{\pi}{2}+\tan^{-1}\left(\frac{4}{715}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{2}{49}\right)+2\tan^{-1}\left(\frac{1}{4}\right)\right)$$

(result in radians)

Decimal approximation:

139.6846078056811183908538216531855685038540809346902005821...

(result in radians)

139.684607… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$4\left(1+8\pi+8\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$4+64\left(\frac{\pi}{2}+\frac{1}{2}\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$4+32\pi+64\tan^{-1}\left(\frac{4}{715}\right)+64\tan^{-1}\left(\frac{3}{232}\right)+64\tan^{-1}\left(\frac{2}{49}\right)+128\tan^{-1}\left(\frac{1}{4}\right)$$

Continued fraction:

$$139+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{7+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{19+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{12+\cfrac{1}{2+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}$$

Alternative representations:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4=$$
$$4+64\left(\frac{\pi}{2}+2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)\right)$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+64\left(\frac{\pi}{2}+2\tan^{-1}\left(1,\ \frac{1}{4}\right)+\tan^{-1}\left(1,\ \frac{2}{49}\right)+\tan^{-1}\left(1,\ \frac{3}{232}\right)+\tan^{-1}\left(1,\ \frac{4}{715}\right)\right)$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+64\left(\frac{\pi}{2}+2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{49}}\right)+\cot^{-1}\left(\frac{1}{\frac{3}{232}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)\right)$$

Series representations:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi+\sum_{k=0}^{\infty}\left(\frac{(-1)^k\, 2^{5-4k}}{1+2k}+64\left(\frac{(-1)^k\, 2^{1+2k}\times 49^{-1-2k}}{1+2k}+\frac{(-1)^k\, 3^{1+2k}\times 232^{-1-2k}}{1+2k}+\frac{(-1)^k\, 4^{1+2k}\times 715^{-1-2k}}{1+2k}\right)\right)$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi-32\,i\log\left(1+\frac{4\,i}{715}\right)-32\,i\log\left(1+\frac{3\,i}{232}\right)-32\,i\log\left(1+\frac{2\,i}{49}\right)-64\,i\log\left(1+\frac{i}{4}\right)+160\,i\log(2)+\sum_{k=1}^{\infty}-\frac{i\,2^{5-3k}\left(\left(4+\frac{16\,i}{715}\right)^k+\left(4+\frac{3\,i}{58}\right)^k+\left(4+\frac{8\,i}{49}\right)^k+2\,(4+i)^k\right)}{k}$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi+320\tan^{-1}(z_0)+\sum_{k=1}^{\infty}\frac{1}{k}32\,i\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{4}{715}-z_0\right)^k+\left(\frac{3}{232}-z_0\right)^k+\left(\frac{2}{49}-z_0\right)^k+2\left(\frac{1}{4}-z_0\right)^k\right)(-i-z_0)^{-k}\,(i-z_0)^{-k}$$

for $(i\,z_0 \notin \mathbb{R}$ or (not $(1 \le i\,z_0 < \infty)$ and not $(-\infty < i\,z_0 \le -1)))$

Integral representations:

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi+\int_0^1 128\left(\frac{4}{16+t^2}+\frac{49}{2401+4\,t^2}+\frac{348}{53\,824+9\,t^2}+\frac{1430}{511\,225+16\,t^2}\right)dt$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{3+4s}\times 17^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{32\,i\,49^{-1+2s}\times 2405^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{3\,i\,2^{1+6s}\times 29^{-1+2s}\times 53\,833^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{64\,i\,715^{-1+2s}\times 511\,241^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$64\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+4 = 4+32\pi+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{3+4s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\left(\frac{3}{29}\right)^{1-2s}2^{1+6s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{5-2s}\times 49^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,4^{3-2s}\times 715^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

1/10^52(((1/2(((Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715))))+4/10^2+55/10^4)))

Where 4 is a Lucas number and 55 is a Fibonacci number

Input:

$$\frac{1}{10^{52}}\left(\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$\frac{\frac{91}{2000}+\frac{1}{2}\left(\frac{\pi}{2}+\tan^{-1}\left(\frac{4}{715}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{2}{49}\right)+2\tan^{-1}\left(\frac{1}{4}\right)\right)}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

(result in radians)

Decimal approximation:

1.1055359984818837374285454816655122539363600073022671... × 10^{-52}

(result in radians)

1.10553599…*10^{-52} result practically equal to the value of Cosmological Constant 1.1056*10^{-52} m^{-2}

Alternate forms:

$$\frac{91 + 500\pi + 1000\tan^{-1}\left(\frac{37101}{624722}\right) + 2000\cot^{-1}(4)}{20000000000000000000000000000000000000000000000000000}$$

$$\frac{\frac{91}{2000} + \frac{1}{2}\left(\frac{\pi}{2} + \frac{1}{2}\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)}{10000000000000000000000000000000000000000000000000000}$$

$$\frac{91 + 500\pi + 1000\tan^{-1}\left(\frac{4}{715}\right) + 1000\tan^{-1}\left(\frac{3}{232}\right) + 1000\tan^{-1}\left(\frac{2}{49}\right) + 2000\tan^{-1}\left(\frac{1}{4}\right)}{20000000000000000000000000000000000000000000000000000}$$

$\cot^{-1}(x)$ is the inverse cotangent function

Continued fraction:

$$\frac{1}{9045386141864170685714859845338243105426813297851533 + \frac{1}{\dots}}$$

Alternative representations:

$$\frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}} = \frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}}$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}} = \frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\tan^{-1}\left(1, \frac{1}{4}\right) + \tan^{-1}\left(1, \frac{2}{49}\right) + \tan^{-1}\left(1, \frac{3}{232}\right) + \tan^{-1}\left(1, \frac{4}{715}\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}}$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}} = \frac{\frac{1}{2}\left(\frac{\pi}{2} + 2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right) + \cot^{-1}\left(\frac{1}{\frac{2}{49}}\right) + \cot^{-1}\left(\frac{1}{\frac{3}{232}}\right) + \cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)\right) + \frac{4}{10^2} + \frac{55}{10^4}}{10^{52}}$$

Series representations:

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}}=$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+$$

$$\sum_{k=0}^{\infty}\left(\frac{(-1)^k\,4^{-27-2k}}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,(1+2k)}+\frac{\frac{(-1)^k\,2^{1+2k}\times 49^{-1-2k}}{1+2k}+\frac{(-1)^k\,3^{1+2k}\times 232^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 715^{-1-2k}}{1+2k}}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}\right)$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}} =$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$

$$\frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$

$$\sum_{k=0}^{\infty}\left(\frac{(-1)^k\, 2^{-53-2k}\times 5^{-52-k}\left(1+\frac{\sqrt{\frac{21}{5}}}{2}\right)^{-1-2k} F_{1+2k}}{1+2k} + \right.$$

$$\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(49\left(1+\frac{\sqrt{\frac{12021}{5}}}{49}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \right.$$

$$\frac{\left(-\frac{1}{5}\right)^k 3^{1+2k}\left(116\left(1+\frac{\sqrt{\frac{67\,289}{5}}}{116}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} +$$

$$\left.\frac{(-1)^k\, 5^{-1-3k}\times 8^{1+2k}\left(143\left(1+\frac{3\sqrt{\frac{284\,021}{5}}}{715}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right) \Bigg/$$

$$\left. 20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \right)$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}} =$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{\tan^{-1}(z_0)}{4\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$
$$\sum_{k=1}^{\infty}\left(i\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{4}{715}-z_0\right)^k+\left(\frac{3}{232}-z_0\right)^k+\left(\frac{2}{49}-z_0\right)^k+2\left(\frac{1}{4}-z_0\right)^k\right)(-i-z_0)^{-k}(i-z_0)^{-k}\right) \Big/ (40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\, k)$$

for $(i z_0 \notin \mathbb{R}$ or (not $(1 \leq i z_0 < \infty)$ and not $(-\infty < i z_0 \leq -1)))$

Integral representations:

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}} =$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$
$$\int_0^1 \left((295\,629\,283\,069\,120+2\,474\,267\,015\,600\, t^2+1\,421\,487\,607\, t^4+83\,112\, t^6) \Big/ (10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,(16+t^2)(2401+4t^2)(53\,824+9t^2)(511\,225+16t^2))\right) dt$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}} =$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$
$$\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{29}\right)^{1-2s}4^{-29+3s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-14+s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,4^{-27-s}\times 49^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-53-4s}\times 5^{-53+2s}\times 143^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right) ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\frac{\frac{1}{2}\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+\frac{4}{10^2}+\frac{55}{10^4}}{10^{52}} =$$

$$\frac{91}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$

$$\frac{\pi}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} +$$

$$\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,16^{-14+s}\times 17^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi^{3/2}} - \frac{i\,5^{-52-s}\times 49^{-1+2s}\times 481^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{18\,014\,398\,509\,481\,984\,\pi^{3/2}} - \frac{3\,i\,4^{-29+3s}\times 29^{-1+2s}\times 53\,833^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi^{3/2}} - \frac{i\,5^{-53+2s}\times 143^{-1+2s}\times 511\,241^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{9\,007\,199\,254\,740\,992\,\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

(2sqrt729)(((Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715))))^5 - 521 - 47 -11 - 4 - golden ratio

Where 521, 47, 11 and 4 are Lucas numbers

Input:

$$\left(2\sqrt{729}\right)\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)^5 - 521-47-11-4-\phi$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$-\phi-583+54\left(\frac{\pi}{2}+\tan^{-1}\left(\frac{4}{715}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{2}{49}\right)+2\tan^{-1}\left(\frac{1}{4}\right)\right)^5$$

(result in radians)

Decimal approximation:

1728.228455049695161341666547831448623410007968195432915537...

(result in radians)

1728.228455…

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–

Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

Alternate forms:

$$-\phi - 583 + \frac{27}{16}\left(\pi + \tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)^5$$

$$-583 + \frac{1}{2}\left(-1 - \sqrt{5}\right) + 54\left(\frac{\pi}{2} + \frac{1}{2}\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)^5$$

$$\frac{1}{2}\left(-1167 - \sqrt{5}\right) + 54\left(\frac{\pi}{2} + \tan^{-1}\left(\frac{4}{715}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{2}{49}\right) + 2\tan^{-1}\left(\frac{1}{4}\right)\right)^5$$

Continued fraction:

$$1728 + \cfrac{1}{4 + \cfrac{1}{2 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{6 + \cfrac{1}{2 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{4 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{5 + \cfrac{1}{4 + \cfrac{1}{2 + \cfrac{1}{15 + \cfrac{1}{1 + \cfrac{1}{34 + \cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}$$

Alternative representations:

$$\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right)^5 2\sqrt{729} - 521 - 47 - 11 - 4 - \phi = -583 - \phi + 2\left(\frac{\pi}{2} + 2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right) + \mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)\right)^5 \sqrt{729}$$

$$\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right)^5 2\sqrt{729} - 521 - 47 - 11 - 4 - \phi = -583 - \phi + 2\left(\frac{\pi}{2} + 2\tan^{-1}\left(1, \frac{1}{4}\right) + \tan^{-1}\left(1, \frac{2}{49}\right) + \tan^{-1}\left(1, \frac{3}{232}\right) + \tan^{-1}\left(1, \frac{4}{715}\right)\right)^5 \sqrt{729}$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)^5 2\sqrt{729} - 521-47-11-4-\phi = -583-\phi+2\left(\frac{\pi}{2}+2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{49}}\right)+\cot^{-1}\left(\frac{1}{\frac{3}{232}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)\right)^5 \sqrt{729}$$

(64Pi)*(((Pi/2+2 tan^-1(1/4)+tan^-1(2/49)+tan^-1(3/232)+tan^-1(4/715))))+55+golden ratio

Where 55 is a Fibonacci number

Input:

$$(64\pi)\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)+55+\phi$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$\phi+55+64\pi\left(\frac{\pi}{2}+\tan^{-1}\left(\frac{4}{715}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{2}{49}\right)+2\tan^{-1}\left(\frac{1}{4}\right)\right)$$

(result in radians)

Decimal approximation:

482.88380107629001229298046296236151768698108659924523133332...

(result in radians)

482.88380107… result very near to Holographic Ricci dark energy model, where

$\chi^2_{\mathrm{RDE}} = 483.130.$

Alternate forms:

$$\phi+55+32\pi\left(\pi+\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$55+\frac{1}{2}\left(1+\sqrt{5}\right)+64\pi\left(\frac{\pi}{2}+\frac{1}{2}\tan^{-1}\left(\frac{1206876324}{616464443}\right)\right)$$

$$\phi+55+32\pi^2+64\pi\left(\tan^{-1}\left(\frac{4}{715}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{2}{49}\right)+2\tan^{-1}\left(\frac{1}{4}\right)\right)$$

Continued fraction:

$$482+\cfrac{1}{1+\cfrac{1}{7+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{34+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{43+\cfrac{1}{53+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}}$$

Alternative representations:

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi = 55+\phi+64\pi\left(\frac{\pi}{2}+2\,\mathrm{sc}^{-1}\left(\frac{1}{4}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{2}{49}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{3}{232}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{715}\,\middle|\,0\right)\right)$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi = 55+\phi+64\pi\left(\frac{\pi}{2}+2\tan^{-1}\left(1,\frac{1}{4}\right)+\tan^{-1}\left(1,\frac{2}{49}\right)+\tan^{-1}\left(1,\frac{3}{232}\right)+\tan^{-1}\left(1,\frac{4}{715}\right)\right)$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi = 55+\phi+64\pi\left(\frac{\pi}{2}+2\cot^{-1}\left(\frac{1}{\frac{1}{4}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{49}}\right)+\cot^{-1}\left(\frac{1}{\frac{3}{232}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{715}}\right)\right)$$

Series representations:

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi = 55+\phi+32\pi^2+\sum_{k=0}^{\infty}\left(\frac{(-1)^k\,2^{5-4k}\,\pi}{1+2k}+64\left(\frac{(-1)^k\,2^{1+2k}\times 49^{-1-2k}}{1+2k}+\frac{(-1)^k\,3^{1+2k}\times 232^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 715^{-1-2k}}{1+2k}\right)\pi\right)$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi =$$
$$55+\phi+32\pi^2-32\,i\,\pi\log\left(1+\frac{4i}{715}\right)-32\,i\,\pi\log\left(1+\frac{3i}{232}\right)-$$
$$32\,i\,\pi\log\left(1+\frac{2i}{49}\right)-64\,i\,\pi\log\left(1+\frac{i}{4}\right)+160\,i\,\pi\log(2)+$$
$$\sum_{k=1}^{\infty}-\frac{i\,2^{5-4k}\left(2^{1+k}(4+i)^k+\left(8+\frac{32i}{715}\right)^k+\left(8+\frac{3i}{29}\right)^k+\left(8+\frac{16i}{49}\right)^k\right)\pi}{k}$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi =$$
$$55+\phi+32\pi^2+320\pi\tan^{-1}(z_0)+\sum_{k=1}^{\infty}\frac{1}{k}32\,i\,\pi\left((-i-z_0)^k-(i-z_0)^k\right)$$
$$\left(\left(\frac{4}{715}-z_0\right)^k+\left(\frac{3}{232}-z_0\right)^k+\left(\frac{2}{49}-z_0\right)^k+2\left(\frac{1}{4}-z_0\right)^k\right)(-i-z_0)^{-k}(i-z_0)^{-k}$$
for $(i z_0 \notin \mathbb{R}$ or (not $(1 \leq i z_0 < \infty)$ and not $(-\infty < i z_0 \leq -1)))$

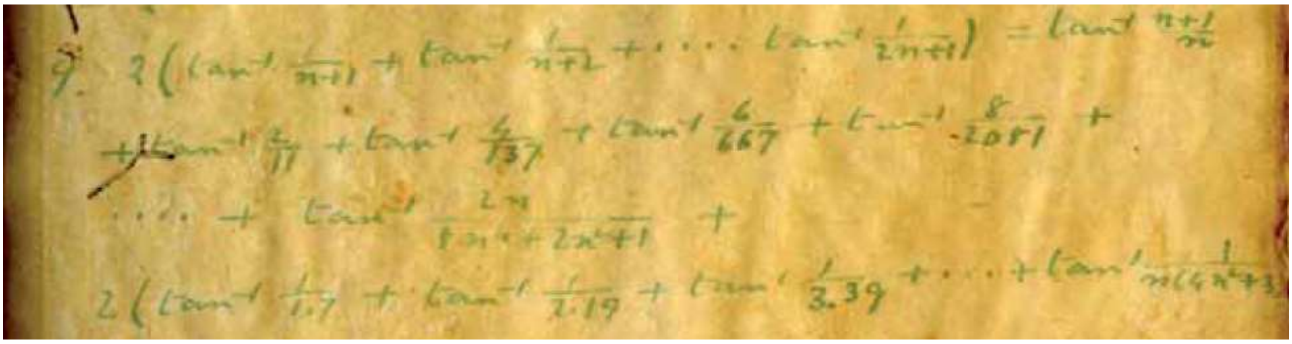
Integral representations:

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi = 55+\phi+$$
$$32\pi^2+\int_0^1 128\pi\left(\frac{4}{16+t^2}+\frac{49}{2401+4t^2}+\frac{348}{53\,824+9t^2}+\frac{1430}{511\,225+16t^2}\right)dt$$

$$\left(\frac{\pi}{2}+2\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{49}\right)+\tan^{-1}\left(\frac{3}{232}\right)+\tan^{-1}\left(\frac{4}{715}\right)\right)64\pi+55+\phi =$$
$$\frac{111}{2}+\frac{\sqrt{5}}{2}+32\pi^2+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{3+4s}\times 17^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)^2}{\sqrt{\pi}}-\right.$$
$$\frac{32\,i\,49^{-1+2s}\times 2405^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)^2}{\sqrt{\pi}}-$$
$$\frac{3\,i\,2^{1+6s}\times 29^{-1+2s}\times 53\,833^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)^2}{\sqrt{\pi}}-$$
$$\left.\frac{64\,i\,715^{-1+2s}\times 511\,241^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)^2}{\sqrt{\pi}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\left(\frac{\pi}{2} + 2\tan^{-1}\left(\frac{1}{4}\right) + \tan^{-1}\left(\frac{2}{49}\right) + \tan^{-1}\left(\frac{3}{232}\right) + \tan^{-1}\left(\frac{4}{715}\right)\right) 64\pi + 55 + \phi =$$

$$\frac{111}{2} + \frac{\sqrt{5}}{2} + 32\pi^2 + \int_{-i\infty+\gamma}^{i\infty+\gamma} \left(-\frac{i\, 2^{3+4s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\Gamma\left(\frac{3}{2}-s\right)} - \frac{i \left(\frac{3}{29}\right)^{1-2s} 2^{1+6s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\, 2^{5-2s} \times 49^{-1+2s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\, 4^{3-2s} \times 715^{-1+2s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\Gamma\left(\frac{3}{2}-s\right)} \right) ds \quad \text{for } 0 < \gamma < \frac{1}{2}$$


9. $2\left(\tan^{-1}\frac{1}{n+1} + \tan^{-1}\frac{1}{n+2} + \cdots \tan^{-1}\frac{1}{2n+1}\right) = \tan^{-1}\frac{n+1}{n}$
$+ \tan^{-1}\frac{2}{11} + \tan^{-1}\frac{4}{137} + \tan^{-1}\frac{6}{667} + \tan^{-1}\frac{8}{2081} +$
$\cdots + \tan^{-1}\frac{2n}{4n^4+2n^2+1} +$
$2\left(\tan^{-1}\frac{1}{1.7} + \tan^{-1}\frac{1}{2.19} + \tan^{-1}\frac{1}{3.39} + \cdots + \tan^{-1}\frac{1}{n(4n^2+3)}\right)$

tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))

Input:

$$\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1\times 7}\right) + \tan^{-1}\left(\frac{1}{2\times 19}\right) + \tan^{-1}\left(\frac{1}{3\times 39}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)$$

(result in radians)

Decimal approximation:

0.540532460988462138862232938477006807739679436496088200084...

(result in radians)

0.5405324…

Alternate forms:

$$\frac{1}{2}\tan^{-1}\left(\frac{16\,146\,260\,097}{8\,606\,653\,904}\right)$$

$$\frac{1}{2}i\log\left(1-\frac{8i}{2081}\right)-\frac{1}{2}i\log\left(1+\frac{8i}{2081}\right)+\frac{1}{2}i\log\left(1-\frac{i}{117}\right)-\frac{1}{2}i\log\left(1+\frac{i}{117}\right)+\frac{1}{2}i\log\left(1-\frac{6i}{667}\right)-\frac{1}{2}i\log\left(1+\frac{6i}{667}\right)+\frac{1}{2}i\log\left(1-\frac{i}{38}\right)-\frac{1}{2}i\log\left(1+\frac{i}{38}\right)+\frac{1}{2}i\log\left(1-\frac{4i}{137}\right)-\frac{1}{2}i\log\left(1+\frac{4i}{137}\right)+i\log\left(1-\frac{i}{7}\right)-i\log\left(1+\frac{i}{7}\right)+\frac{1}{2}i\log\left(1-\frac{2i}{11}\right)-\frac{1}{2}i\log\left(1+\frac{2i}{11}\right)$$

log(x) is the natural logarithm

Continued fraction:

$$\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{90+\cfrac{1}{17+\cfrac{1}{2+\cfrac{1}{124+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}}$$

Alternative representations:

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=2\,\mathrm{sc}^{-1}\left(\frac{1}{7}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{2}{11}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{38}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{117}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{6}{667}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{8}{2081}\,\middle|\,0\right)$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+\tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=2\cot^{-1}\left(\frac{1}{\frac{1}{7}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{11}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{38}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{117}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{137}}\right)+\cot^{-1}\left(\frac{1}{\frac{6}{667}}\right)+\cot^{-1}\left(\frac{1}{\frac{8}{2081}}\right)$$

Series representations:

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=\sum_{k=0}^{\infty}\left(\frac{2(-1)^k\,7^{-1-2k}}{1+2k}+\frac{(-1)^k\,2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k\,38^{-1-2k}}{1+2k}+\frac{(-1)^k\,117^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 137^{-1-2k}}{1+2k}+\frac{(-1)^k\,6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k\,8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=$$
$$-\frac{1}{2}\,i\log\left(\frac{1}{256}+\frac{i}{66\,592}\right)-\frac{1}{2}\,i\log\left(1+\frac{i}{117}\right)-\frac{1}{2}\,i\log\left(1+\frac{6\,i}{667}\right)-\frac{1}{2}\,i\log\left(1+\frac{i}{38}\right)-\frac{1}{2}\,i\log\left(1+\frac{4\,i}{137}\right)-i\log\left(1+\frac{i}{7}\right)-\frac{1}{2}\,i\log\left(1+\frac{2\,i}{11}\right)+\sum_{k=1}^{\infty}-\frac{1}{k}\,i\,2^{-1-k}\left(\left(1+\frac{8\,i}{2081}\right)^k+\left(1+\frac{i}{117}\right)^k+\left(1+\frac{6\,i}{667}\right)^k+\left(1+\frac{i}{38}\right)^k+\left(1+\frac{4\,i}{137}\right)^k+2\left(1+\frac{i}{7}\right)^k+\left(1+\frac{2\,i}{11}\right)^k\right)$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=$$
$$8\tan^{-1}(z_0)+\sum_{k=1}^{\infty}\left(\frac{1}{2}\,i\left(\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{8}{2081}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{117}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{6}{667}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{38}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{4}{137}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{2}{11}-z_0\right)^k}{k}\right)+\frac{i\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)$$

for $(i\,z_0\notin\mathbb{R}$ or (not $(1\leq i\,z_0<\infty)$ and not $(-\infty<i\,z_0\leq -1)))$

Integral representations:

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=$$
$$\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13\,689+t^2}+\frac{22}{121+4\,t^2}+\frac{548}{18\,769+16\,t^2}+\frac{4002}{444\,889+36\,t^2}+\frac{16\,648}{4\,330\,561+64\,t^2}\right)dt$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=$$

$$\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,11^{-1+2s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{i\,2^{-3+2s}\times 19^{-1+2s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,2^{-2-s}\times 117^{-1+2s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,137^{-1+2s}\times 18\,785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{3\,i\,667^{-1+2s}\times 444\,925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{2\,i\,2081^{-1+2s}\times 4\,330\,625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)=$$

$$\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s}2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{2\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{4\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

exp((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))

Input:

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$e^{\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)}$$

(result in radians)

Decimal approximation:

1.716920812194674850257720824221583443513212138596577877343...

(result in radians)

1.716920812…

Alternate forms:

$$e^{1/2\tan^{-1}(16146260097/8606653904)}$$

$$\left(\frac{8606653904}{18296890625}+\frac{16146260097\,i}{18296890625}\right)^{-i/2}$$

Alternative representations:

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=\exp\left(2\,\mathrm{sc}^{-1}\left(\frac{1}{7}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{2}{11}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{38}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{117}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{6}{667}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{8}{2081}\,\middle|\,0\right)\right)$$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=\exp\left(2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+\tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)\right)$$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=$$
$$\exp\left(2\cot^{-1}\left(\frac{1}{\frac{1}{7}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{11}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{38}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{117}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{137}}\right)+\cot^{-1}\left(\frac{1}{\frac{6}{667}}\right)+\cot^{-1}\left(\frac{1}{\frac{8}{2081}}\right)\right)$$

Series representations:

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=$$
$$\exp\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k 7^{-1-2k}}{1+2k}+\frac{(-1)^k 2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k 38^{-1-2k}}{1+2k}+\frac{(-1)^k 117^{-1-2k}}{1+2k}+\frac{(-1)^k 4^{1+2k}\times 137^{-1-2k}}{1+2k}+\frac{(-1)^k 6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k 8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)$$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=$$
$$\exp\left(8\tan^{-1}(z_0)+\frac{1}{2}i\sum_{k=1}^{\infty}\left(\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{8}{2081}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{117}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{6}{667}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{38}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{4}{137}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{2}{11}-z_0\right)^k}{k}\right)+i\sum_{k=1}^{\infty}\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)$$

for $(i z_0 \notin \mathbb{R}$ or (not $(1 \le i z_0 < \infty)$ and not $(-\infty < i z_0 \le -1)))$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=$$

$$\exp\left(\sum_{k=0}^{\infty}\left(\frac{\left(-\frac{1}{5}\right)^{k} 4^{1+2k}\left(11\left(1+\frac{3\sqrt{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k} 2^{2+2k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k}\left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k} 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k} 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k} 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2224589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^{k} 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21653061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\right)$$

Integral representations:

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=\exp\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13\,689+t^2}+\frac{22}{121+4t^2}+\frac{548}{18\,769+16t^2}+\frac{4002}{444\,889+36t^2}+\frac{16\,648}{4\,330\,561+64t^2}\right)dt\right)$$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,11^{-1+2s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{i\,2^{-3+2s}\times 19^{-1+2s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,2^{-2-s}\times 117^{-1+2s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,137^{-1+2s}\times 18\,785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{3\,i\,667^{-1+2s}\times 444\,925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{2\,i\,2081^{-1+2s}\times 4\,330\,625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds\right)\quad\text{for } 0<\gamma<\frac{1}{2}$$

$$\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)=$$

$$\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s}2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds\right)\quad\text{for } 0<\gamma<\frac{1}{2}$$

10^2*exp((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))-29-Pi

Where 29 is a Lucas number

Input:

$$10^2\exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$100\exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)-29-\pi$$

(result in radians)

Decimal approximation:

139.5504885658776917873094390388788414671240444602826819133...

(result in radians)

139.550488… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$-29 - \pi + 100\, e^{1/2 \tan^{-1}(16146260097/8606653904)}$$

$$-29 + 4 \times 25^{1+(3 i)/2} \left(\frac{8606653904}{1171001} + \frac{16146260097 i}{1171001}\right)^{-i/2} - \pi$$

$$100 \exp\left(\frac{1}{2} i \left(\log\left(1 - \frac{8 i}{2081}\right) - \log\left(1 + \frac{8 i}{2081}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{i}{117}\right) - \log\left(1 + \frac{i}{117}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{6 i}{667}\right) - \log\left(1 + \frac{6 i}{667}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{i}{38}\right) - \log\left(1 + \frac{i}{38}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{4 i}{137}\right) - \log\left(1 + \frac{4 i}{137}\right)\right) + i \left(\log\left(1 - \frac{i}{7}\right) - \log\left(1 + \frac{i}{7}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{2 i}{11}\right) - \log\left(1 + \frac{2 i}{11}\right)\right)\right) - 29 - \pi$$

log(x) is the natural logarithm

Continued fraction:

$$-29 + 4 \times 25^{1+(3 i)/2} \left(\frac{8606653904}{1171001} + \frac{16146260097 i}{1171001}\right)^{-i/2} - \pi + \frac{1}{100 + \frac{1}{\cdots}}$$

(using the Hurwitz expansion)

Alternative representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2 \tan^{-1}\left(\frac{1}{1 \times 7}\right) + \tan^{-1}\left(\frac{1}{2 \times 19}\right) + \tan^{-1}\left(\frac{1}{3 \times 39}\right)\right) - 29 - \pi = -29 - \pi + \exp\left(2 \tan^{-1}\left(1, \frac{1}{7}\right) + \tan^{-1}\left(1, \frac{2}{11}\right) + \tan^{-1}\left(1, \frac{1}{38}\right) + \tan^{-1}\left(1, \frac{1}{117}\right) + \tan^{-1}\left(1, \frac{4}{137}\right) + \tan^{-1}\left(1, \frac{6}{667}\right) + \tan^{-1}\left(1, \frac{8}{2081}\right)\right) 10^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2 \tan^{-1}\left(\frac{1}{1 \times 7}\right) + \tan^{-1}\left(\frac{1}{2 \times 19}\right) + \tan^{-1}\left(\frac{1}{3 \times 39}\right)\right) - 29 - \pi = -29 - \pi + \exp\left(i \left(\log\left(1 - \frac{i}{7}\right) - \log\left(1 + \frac{i}{7}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{2 i}{11}\right) - \log\left(1 + \frac{2 i}{11}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{i}{38}\right) - \log\left(1 + \frac{i}{38}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{i}{117}\right) - \log\left(1 + \frac{i}{117}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{4 i}{137}\right) - \log\left(1 + \frac{4 i}{137}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{6 i}{667}\right) - \log\left(1 + \frac{6 i}{667}\right)\right) + \frac{1}{2} i \left(\log\left(1 - \frac{8 i}{2081}\right) - \log\left(1 + \frac{8 i}{2081}\right)\right)\right) 10^2$$

Series representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi =$$
$$-29+100\exp\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k\, 7^{-1-2k}}{1+2k}+\frac{(-1)^k\, 2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k\, 38^{-1-2k}}{1+2k}+\frac{(-1)^k\, 117^{-1-2k}}{1+2k}+\frac{(-1)^k\, 4^{1+2k}\times 137^{-1-2k}}{1+2k}+\frac{(-1)^k\, 6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k\, 8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)-\pi$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi =$$
$$-29+100\exp\left(8\tan^{-1}(z_0)+\frac{1}{2}i\sum_{k=1}^{\infty}\left(\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{8}{2081}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{117}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{6}{667}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{38}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{4}{137}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{2}{11}-z_0\right)^k}{k}\right)+ i\sum_{k=1}^{\infty}\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)-\pi$$

for $(i z_0 \notin \mathbb{R}$ or $($not $(1 \le i z_0 < \infty)$ and not $(-\infty < i z_0 \le -1)))$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi =$$

$$-29+100\exp\left(\sum_{k=0}^{\infty}\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(11\left(1+\frac{3\sqrt{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 2^{2+2k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k \left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2224589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21653061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\right)-\pi$$

Integral representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi = -29+100\exp\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13\,689+t^2}+\frac{22}{121+4t^2}+\frac{548}{18\,769+16t^2}+\frac{4002}{444\,889+36t^2}+\frac{16\,648}{4\,330\,561+64t^2}\right)dt\right)-\pi$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi = -29+100\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,11^{-1+2s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\pi^{3/2}} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,2^{-2-s}\times 117^{-1+2s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,137^{-1+2s}\times 18\,785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{3i\,667^{-1+2s}\times 444\,925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\pi^{3/2}} - \frac{2i\,2081^{-1+2s}\times 4\,330\,625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds\right)-\pi \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-\pi =$$

$$-29+100\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s} 2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds\right)-\pi \quad \text{for } 0<\gamma<\frac{1}{2}$$

10^2*exp((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))-29-5Pi-golden ratio

Where 29 is a Lucas number

Input:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$100\exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+ \tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)-\phi-29-5\pi$$

(result in radians)

Decimal approximation:

125.36608396276862398525427867139519181261505768297649576 73...

(result in radians)

125.3660839... result 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

Alternate forms:

$$-\phi - 29 - 5\pi + 100\, e^{1/2 \tan^{-1}(16146260097/8606653904)}$$

$$-29 + 4 \times 25^{1+(3i)/2} \left(\frac{8606653904}{1171001} + \frac{16146260097\, i}{1171001}\right)^{-i/2} + \frac{1}{2}\left(-1-\sqrt{5}\right) - 5\pi$$

$$\frac{1}{2}\left(200 \exp\left(\tan^{-1}\left(\frac{8}{2081}\right) + \tan^{-1}\left(\frac{1}{117}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{1}{38}\right) + \tan^{-1}\left(\frac{4}{137}\right) + 2\tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{2}{11}\right)\right) - 59 - \sqrt{5} - 10\pi\right)$$

Continued fraction:

$$-\frac{59}{2} - \frac{\sqrt{5}}{2} + 4 \times 25^{1+(3i)/2} \left(\frac{8606653904}{1171001} + \frac{16146260097\, i}{1171001}\right)^{-i/2} - 5\pi + \frac{1}{2 + \frac{1}{\dots}}$$

(using the Hurwitz expansion)

Alternative representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1 \times 7}\right) + \tan^{-1}\left(\frac{1}{2 \times 19}\right) + \tan^{-1}\left(\frac{1}{3 \times 39}\right)\right) - 29 - 5\pi - \phi =$$

$$-29 - \phi - 5\pi + \exp\left(2\tan^{-1}\left(1, \frac{1}{7}\right) + \tan^{-1}\left(1, \frac{2}{11}\right) + \tan^{-1}\left(1, \frac{1}{38}\right) + \tan^{-1}\left(1, \frac{1}{117}\right) + \tan^{-1}\left(1, \frac{4}{137}\right) + \tan^{-1}\left(1, \frac{6}{667}\right) + \tan^{-1}\left(1, \frac{8}{2081}\right)\right) 10^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi =$$

$$-29-\phi-5\pi+\exp\left(i\left(\log\left(1-\frac{i}{7}\right)-\log\left(1+\frac{i}{7}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{2i}{11}\right)-\log\left(1+\frac{2i}{11}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{i}{38}\right)-\log\left(1+\frac{i}{38}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{117}\right)-\log\left(1+\frac{i}{117}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{4i}{137}\right)-\log\left(1+\frac{4i}{137}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{6i}{667}\right)-\log\left(1+\frac{6i}{667}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{8i}{2081}\right)-\log\left(1+\frac{8i}{2081}\right)\right)\right)10^2$$

Series representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi =$$

$$-29+100\exp\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k 7^{-1-2k}}{1+2k}+\frac{(-1)^k 2^{1+2k}\times 11^{-1-2k}}{1+2k}+ \frac{(-1)^k 38^{-1-2k}}{1+2k}+\frac{(-1)^k 117^{-1-2k}}{1+2k}+\frac{(-1)^k 4^{1+2k}\times 137^{-1-2k}}{1+2k}+ \frac{(-1)^k 6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k 8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)-\phi-5\pi$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi=\frac{1}{2}$$

$$\left(-59-\sqrt{5}+200\exp\left(8\tan^{-1}(z_0)+\frac{1}{2}i\sum_{k=1}^{\infty}\left(\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{8}{2081}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{117}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{6}{667}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{38}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{4}{137}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{2}{11}-z_0\right)^k}{k}\right)+ i\sum_{k=1}^{\infty}\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)-10\pi\right)$$

for $(i z_0 \notin \mathbb{R}$ or $($ not $(1 \leq i z_0 < \infty)$ and not $(-\infty < i z_0 \leq -1)))$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1\times 7}\right) + \tan^{-1}\left(\frac{1}{2\times 19}\right) + \tan^{-1}\left(\frac{1}{3\times 39}\right)\right) - 29 - 5\pi - \phi =$$

$$-29 + 100 \exp\left(\sum_{k=0}^{\infty}\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(11\left(1+\frac{3\sqrt{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 2^{2+2k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k \left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2224589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21653061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\right) - \phi - 5\pi$$

Integral representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi = -29+100\exp\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13689+t^2}+\frac{22}{121+4t^2}+\frac{548}{18769+16t^2}+\frac{4002}{444889+36t^2}+\frac{16648}{4330561+64t^2}\right)dt\right)-\phi-5\pi$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)-29-5\pi-\phi = -29+100\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,11^{-1+2s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\pi^{3/2}} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,2^{-2-s}\times 117^{-1+2s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,137^{-1+2s}\times 18785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{3i\,667^{-1+2s}\times 444925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\pi^{3/2}} - \frac{2i\,2081^{-1+2s}\times 4330625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right) ds\right)-\phi-5\pi \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right) - 29 - 5\pi - \phi =$$

$$-29 + 100 \exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s} 2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right) ds\right) - \phi - 5\pi \quad \text{for } 0 < \gamma < \frac{1}{2}$$

10^3*exp((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))+13-golden ratio

Where 13 is a Fibonacci number

Input:

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right) + 13 - \phi$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$1000 \exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)-\phi+13$$

(result in radians)

Decimal approximation:

1728.302778205924955409516237387217805395491829416772114480...

(result in radians)

1728.302778…

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

Alternate forms:

$$-\phi+13+1000\, e^{1/2 \tan^{-1}(16146260097/8606653904)}$$

$$13+8\times 125^{1+i}\left(\frac{8606653904}{1171001}+\frac{16146260097\, i}{1171001}\right)^{-i/2}+\frac{1}{2}\left(-1-\sqrt{5}\right)$$

$$1000 \exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)+\frac{25}{2}-\frac{\sqrt{5}}{2}$$

Continued fraction:

$$\frac{25}{2}-\frac{\sqrt{5}}{2}+8\times 125^{1+i}\left(\frac{8606653904}{1171001}+\frac{16146260097\, i}{1171001}\right)^{-i/2}+\frac{1}{100+\frac{1}{\cdots}}$$

(using the Hurwitz expansion)

Alternative representations:

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi = 13-\phi+\exp\left(2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+ \tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)\right)10^3$$

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi = 13-\phi+\exp\left(i\left(\log\left(1-\frac{i}{7}\right)-\log\left(1+\frac{i}{7}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{2i}{11}\right)-\log\left(1+\frac{2i}{11}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{i}{38}\right)-\log\left(1+\frac{i}{38}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{117}\right)-\log\left(1+\frac{i}{117}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{4i}{137}\right)-\log\left(1+\frac{4i}{137}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{6i}{667}\right)-\log\left(1+\frac{6i}{667}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{8i}{2081}\right)-\log\left(1+\frac{8i}{2081}\right)\right)\right)10^3$$

Series representations:

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi = 13+1000\exp\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k\, 7^{-1-2k}}{1+2k}+\frac{(-1)^k\, 2^{1+2k}\times 11^{-1-2k}}{1+2k}+ \frac{(-1)^k\, 38^{-1-2k}}{1+2k}+\frac{(-1)^k\, 117^{-1-2k}}{1+2k}+\frac{(-1)^k\, 4^{1+2k}\times 137^{-1-2k}}{1+2k}+ \frac{(-1)^k\, 6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k\, 8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)-\phi$$

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1\times 7}\right) + \tan^{-1}\left(\frac{1}{2\times 19}\right) + \tan^{-1}\left(\frac{1}{3\times 39}\right)\right) + 13 - \phi =$$

$$\frac{1}{2}\left(25 - \sqrt{5} + 2000 \exp\left(8\tan^{-1}(z_0) + \frac{1}{2} i \sum_{k=1}^{\infty}\left(\frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{8}{2081} - z_0\right)^k}{k} + \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{1}{117} - z_0\right)^k}{k} + \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{6}{667} - z_0\right)^k}{k} + \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{1}{38} - z_0\right)^k}{k} + \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{4}{137} - z_0\right)^k}{k} + \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{2}{11} - z_0\right)^k}{k}\right) + i \sum_{k=1}^{\infty} \frac{\left(-(-i - z_0)^{-k} + (i - z_0)^{-k}\right)\left(\frac{1}{7} - z_0\right)^k}{k}\right)\right)$$

for $(i z_0 \notin \mathbb{R}$ or $($ not $(1 \leq i z_0 < \infty)$ and not $(-\infty < i z_0 \leq -1)))$

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1\times 7}\right) + \tan^{-1}\left(\frac{1}{2\times 19}\right) + \tan^{-1}\left(\frac{1}{3\times 39}\right)\right) + 13 - \phi =$$

$$13 + 1000 \exp\left(\sum_{k=0}^{\infty}\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(11\left(1+\frac{3\sqrt{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 2^{2+2k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k \left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2224589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k} + \frac{\left(-\frac{1}{5}\right)^k 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21653061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\right) - \phi$$

Integral representations:

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi = 13+1000\exp\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13\,689+t^2}+\frac{22}{121+4t^2}+ \frac{548}{18\,769+16t^2}+\frac{4002}{444\,889+36t^2}+\frac{16\,648}{4\,330\,561+64t^2}\right)dt\right)-\phi$$

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi = 13+1000\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,11^{-1+2s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,2^{-2-s}\times 117^{-1+2s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\,137^{-1+2s}\times 18\,785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{3\,i\,667^{-1+2s}\times 444\,925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}} - \frac{2\,i\,2081^{-1+2s}\times 4\,330\,625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right) ds\right)-\phi \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$10^3 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+13-\phi =$$

$$13+1000\exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s}2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds\right)-\phi \quad \text{for } 0<\gamma<\frac{1}{2}$$

10^2*exp((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39)))))))*golden ratio^2+34

Where 34 is a Fibonacci number

Input:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34$$

$\tan^{-1}(x)$ is the inverse tangent function

ϕ is the golden ratio

Exact Result:

$$100\,\phi^2 \exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)+34$$

(result in radians)

Decimal approximation:

483.4957042317733702423545314294304229921083099774909041348...

(result in radians)

483.49570423… result practically equal to Holographic Ricci dark energy model, where

$\chi^2_{\mathrm{RDE}} = 483.130.$

Alternate forms:

$$100\,\phi^2\, e^{1/2 \tan^{-1}(16146260097/8606653904)}+34$$

$$34+25^{1+(3\,i)/2}\left(\frac{8606653904}{1171001}+\frac{16146260097\,i}{1171001}\right)^{-i/2}\left(1+\sqrt{5}\right)^2$$

$$2\left(50\,\phi^2 \exp\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)+17\right)$$

Continued fraction:

$$34+2\times 25^{1+(3\,i)/2}\left(\frac{8606653904}{1171001}+\frac{16146260097\,i}{1171001}\right)^{-i/2}\left(3+\sqrt{5}\right)+\frac{1}{99+\frac{1}{\cdots}}$$

(using the Hurwitz expansion)

Alternative representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34=$$
$$34+\exp\left(2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+\tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)\right)10^2\,\phi^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34 =$$

$$34+\exp\left(i\left(\log\left(1-\frac{i}{7}\right)-\log\left(1+\frac{i}{7}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{2i}{11}\right)-\log\left(1+\frac{2i}{11}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{i}{38}\right)-\log\left(1+\frac{i}{38}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{117}\right)-\log\left(1+\frac{i}{117}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{4i}{137}\right)-\log\left(1+\frac{4i}{137}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{6i}{667}\right)-\log\left(1+\frac{6i}{667}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{8i}{2081}\right)-\log\left(1+\frac{8i}{2081}\right)\right)\right)10^2\,\phi^2$$

Series representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34 =$$

$$34+100\exp\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k\,7^{-1-2k}}{1+2k}+\frac{(-1)^k\,2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k\,38^{-1-2k}}{1+2k}+ \frac{(-1)^k\,117^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 137^{-1-2k}}{1+2k}+ \frac{(-1)^k\,6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k\,8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)\phi^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34=$$

$$34+100\exp\left(\sum_{k=0}^{\infty}\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(11\left(1+\frac{\sqrt[3]{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 2^{2+2k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k \left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2224589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\frac{\left(-\frac{1}{5}\right)^k 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21653061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\right)\phi^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34 =$$

$$2\left(17+75\exp\left(8\tan^{-1}(z_0)+\frac{1}{2}\,i\sum_{k=1}^{\infty}\frac{1}{k}\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{8}{2081}-z_0\right)^k+\left(\frac{1}{117}-z_0\right)^k+\left(\frac{6}{667}-z_0\right)^k+\left(\frac{1}{38}-z_0\right)^k+\left(\frac{4}{137}-z_0\right)^k+\left(\frac{2}{11}-z_0\right)^k\right)(-i-z_0)^{-k}(i-z_0)^{-k}+ i\sum_{k=1}^{\infty}\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)+25\sqrt{5}\exp\left(8\tan^{-1}(z_0)+\frac{1}{2}\,i\sum_{k=1}^{\infty}\frac{1}{k}\left((-i-z_0)^k-(i-z_0)^k\right)\left(\left(\frac{8}{2081}-z_0\right)^k+\left(\frac{1}{117}-z_0\right)^k+\left(\frac{6}{667}-z_0\right)^k+\left(\frac{1}{38}-z_0\right)^k+\left(\frac{4}{137}-z_0\right)^k+\left(\frac{2}{11}-z_0\right)^k\right)(-i-z_0)^{-k}(i-z_0)^{-k}+i\sum_{k=1}^{\infty}\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k}{k}\right)\right)$$

for $(i z_0 \notin \mathbb{R}$ or (not $(1 \le i z_0 < \infty)$ and not $(-\infty < i z_0 \le -1)))$

Integral representations:

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2+34 =$$

$$34+100\exp\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13\,689+t^2}+\frac{22}{121+4t^2}+\frac{548}{18\,769+16t^2}+\frac{4002}{444\,889+36t^2}+\frac{16\,648}{4\,330\,561+64t^2}\right)dt\right)\phi^2$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right) + \tan^{-1}\left(\frac{4}{137}\right) + \tan^{-1}\left(\frac{6}{667}\right) + \tan^{-1}\left(\frac{8}{2081}\right) + 2\tan^{-1}\left(\frac{1}{1\times 7}\right) + \tan^{-1}\left(\frac{1}{2\times 19}\right) + \tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2 + 34 =$$

$$34 + 100 \exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\, 2^{-1-s} \times 7^{-1+2s} \times 25^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\, 11^{-1+2s} \times 125^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}} - \frac{i\, 2^{-3+2s} \times 19^{-1+2s} \times 1445^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\, 2^{-2-s} \times 117^{-1+2s} \times 6845^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{i\, 137^{-1+2s} \times 18\,785^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}} - \frac{3\, i\, 667^{-1+2s} \times 444\,925^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}} - \frac{2\, i\, 2081^{-1+2s} \times 4\,330\,625^{-s}\, \Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right) ds\right)\phi^2 \quad \text{for } 0 < \gamma < \frac{1}{2}$$

$$10^2 \exp\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\phi^2 + 34 =$$

$$34 + 100 \exp\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s} 2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)} - \frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds\right)\phi^2 \quad \text{for } 0<\gamma<\frac{1}{2}$$

1/10^52(((2*((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))+24/10^3+5/10^4)))

where 24 is the number of "modes" corresponding to the physical vibrations of a bosonic string and 5 is a Fibonacci number

Input:

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)$$

$\tan^{-1}(x)$ is the inverse tangent function

Exact Result:

$$\left(\frac{49}{2000}+2\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)/10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000$$

(result in radians)

Decimal approximation:

$1.1055649219769242777244658769540136154793588729921764\ldots \times 10^{-52}$

(result in radians)

$1.1055649219\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}\ m^{-2}$

Alternate forms:

$$\frac{\frac{49}{2000}+\tan^{-1}\left(\frac{16\,146\,260\,097}{8\,606\,653\,904}\right)}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\frac{49+2000\tan^{-1}\left(\frac{16\,146\,260\,097}{8\,606\,653\,904}\right)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\left(49+4000\tan^{-1}\left(\frac{8}{2081}\right)+4000\tan^{-1}\left(\frac{1}{117}\right)+4000\tan^{-1}\left(\frac{6}{667}\right)+4000\tan^{-1}\left(\frac{1}{38}\right)+4000\tan^{-1}\left(\frac{4}{137}\right)+8000\tan^{-1}\left(\frac{1}{7}\right)+4000\tan^{-1}\left(\frac{2}{11}\right)\right)/20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000$$

Continued fraction:

$$\frac{1}{9\,045\,149\,498\,881\,010\,406\,892\,110\,893\,350\,659\,005\,159\,037\,535\,263\,771+\frac{1}{\ldots}}$$

Alternative representations:

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$
$$\frac{1}{10^{52}}\left(2\left(2\,\mathrm{sc}^{-1}\left(\frac{1}{7}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{2}{11}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{38}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{1}{117}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{4}{137}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{6}{667}\,\middle|\,0\right)+\mathrm{sc}^{-1}\left(\frac{8}{2081}\,\middle|\,0\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{1}{10^{52}}\left(2\left(2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+\tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{1}{10^{52}}\left(2\left(2\cot^{-1}\left(\frac{1}{\frac{1}{7}}\right)+\cot^{-1}\left(\frac{1}{\frac{2}{11}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{38}}\right)+\cot^{-1}\left(\frac{1}{\frac{1}{117}}\right)+\cot^{-1}\left(\frac{1}{\frac{4}{137}}\right)+\cot^{-1}\left(\frac{1}{\frac{6}{667}}\right)+\cot^{-1}\left(\frac{1}{\frac{8}{2081}}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)$$

Series representations:

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\sum_{k=0}^{\infty}\left(\left((-1)^k\,7^{-1-2k}\right)\Big/\left(2500\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,(1+2k)\right)+\left(\frac{(-1)^k\,2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k\,38^{-1-2k}}{1+2k}+\frac{(-1)^k\,117^{-1-2k}}{1+2k}+\frac{(-1)^k\,4^{1+2k}\times 137^{-1-2k}}{1+2k}+\frac{(-1)^k\,6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k\,8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\Big/5\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\right)$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+$$

$$\sum_{k=0}^{\infty}\left(\frac{(-1)^k\,2^{-49+2k}\times 5^{-52-k}\left(7\left(1+\frac{\sqrt{\frac{249}{5}}}{7}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\right.$$

$$\left(\frac{\left(-\frac{1}{5}\right)^k 4^{1+2k}\left(11\left(1+\frac{3\sqrt{\frac{69}{5}}}{11}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+\right.$$

$$\frac{\left(-\frac{1}{5}\right)^k\left(19\left(1+\frac{\sqrt{\frac{1806}{5}}}{19}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+$$

$$\frac{\left(-\frac{1}{5}\right)^k 2^{1+2k}\left(117\left(1+\frac{\sqrt{\frac{68\,449}{5}}}{117}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+$$

$$\frac{\left(-\frac{1}{5}\right)^k 8^{1+2k}\left(137\left(1+\frac{\sqrt{\frac{93\,909}{5}}}{137}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+$$

$$\frac{\left(-\frac{1}{5}\right)^k 12^{1+2k}\left(667\left(1+\frac{\sqrt{\frac{2\,224\,589}{5}}}{667}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}+$$

$$\left.\left.\frac{\left(-\frac{1}{5}\right)^k 16^{1+2k}\left(2081\left(1+\frac{\sqrt{\frac{21\,653\,061}{5}}}{2081}\right)\right)^{-1-2k} F_{1+2k}}{1+2k}\right)\middle/ 5\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\right)$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\tan^{-1}(z_0)}{625\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+$$

$$\sum_{k=1}^{\infty}\left(\left(i\left(\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{8}{2081}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{117}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{6}{667}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{38}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{4}{137}-z_0\right)^k}{k}+\frac{\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{2}{11}-z_0\right)^k}{k}\right)\right)\Big/ 10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 + \left(i\left(-(-i-z_0)^{-k}+(i-z_0)^{-k}\right)\left(\frac{1}{7}-z_0\right)^k\right)\Big/(5\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,k)\right)\quad\text{for}$$

$$(i z_0 \notin \mathbb{R} \text{ or } (\text{ not } (1 \le i z_0 < \infty) \text{ and not } (-\infty < i z_0 \le -1)))$$

Integral representations:

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+$$

$$\int_0^1\Big((2\,307\,284\,220\,800\,640\,760\,162\,197\,714+76\,943\,160\,118\,093\,839\,837\,812\,831\,t^2+336\,989\,524\,630\,351\,184\,739\,785\,t^4+303\,008\,333\,810\,709\,499\,020\,t^6+74\,480\,820\,522\,338\,960\,t^8+5\,197\,556\,474\,816\,t^{10}+85\,530\,624\,t^{12})\Big/(5\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,(49+t^2)(1444+t^2)(13\,689+t^2)(121+4t^2)(18\,769+16t^2)(444\,889+36t^2)(4\,330\,561+64t^2))\Big)\,dt$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+$$

$$\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\left(-\frac{i\,5^{-52-3\,s}\times 11^{-1+2\,s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{4\,503\,599\,627\,370\,496\,\pi^{3/2}}-\frac{i\,2^{-52-s}\times 7^{-1+2\,s}\times 25^{-26-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,4^{-27+s}\times 5^{-52-s}\times 19^{-1+2\,s}\times 289^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,2^{-53-s}\times 5^{-52-s}\times 117^{-1+2\,s}\times 1369^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,5^{-52-s}\times 137^{-1+2\,s}\times 3757^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,251\,799\,813\,685\,248\,\pi^{3/2}}-\frac{i\,625^{-13-s}\times 2081^{-1+2\,s}\times 6929^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{1\,125\,899\,906\,842\,624\,\pi^{3/2}}-\frac{3\,i\,25^{-26-s}\times 667^{-1+2\,s}\times 17\,797^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{4\,503\,599\,627\,370\,496\,\pi^{3/2}}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\frac{1}{10^{52}}\left(2\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)+\frac{24}{10^3}+\frac{5}{10^4}\right)=$$

$$\frac{49}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\left(\left(i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)\right)\Big/\left(10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi\,\Gamma\left(\frac{3}{2}-s\right)\right)\right)-\frac{i\,4^{-26-s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,4^{-27+s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\left(i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)\right)\Big/\left(20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi\,\Gamma\left(\frac{3}{2}-s\right)\right)-\frac{i\,2^{-51-4s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,3^{1-2s}\times 4^{-26-s}\times 667^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,4^{-25-3s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\Gamma(s)}{2\,220\,446\,049\,250\,313\,080\,847\,263\,336\,181\,640\,625\,\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds \quad \text{for } 0<\gamma<\frac{1}{2}$$

[-ln((((tan^-1(2/11)+tan^-1(4/137) + tan^-1(6/667)+tan^-1(8/2081)+2(tan^-1(1/(1*7)))+tan^-1(1/(2*19))+tan^-1(1/(3*39))))))]^1/64

Input:

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\hat{}\,(1/64)$$

$\tan^{-1}(x)$ is the inverse tangent function

log(x) is the natural logarithm

Exact Result:

$$\left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\text{^}(1/64)$$

(result in radians)

Decimal approximation:

0.99243800392397546484972376194899905853269586841714531758 6...

(result in radians)

0.9924380039… result very near to the value of the following Rogers-Ramanujan continued fraction:

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

and to the dilaton value 0.989117352243 = ϕ

Alternate forms:

$$\sqrt[64]{\log\left(\frac{2}{\tan^{-1}\left(\frac{16146260097}{8606653904}\right)}\right)}$$

$$\sqrt[64]{-1}\,e^{-(i\pi)/32}\sqrt[64]{\log\left(\tan^{-1}\left(\frac{16146260097}{8606653904}\right)\right)-\log(2)}$$

$$\left(-\log\left(\frac{1}{2}i\left(\log\left(1-\frac{8i}{2081}\right)-\log\left(1+\frac{8i}{2081}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{117}\right)-\log\left(1+\frac{i}{117}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{6i}{667}\right)-\log\left(1+\frac{6i}{667}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{38}\right)-\log\left(1+\frac{i}{38}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{4i}{137}\right)-\log\left(1+\frac{4i}{137}\right)\right)+i\left(\log\left(1-\frac{i}{7}\right)-\log\left(1+\frac{i}{7}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{2i}{11}\right)-\log\left(1+\frac{2i}{11}\right)\right)\right)\right)\text{^}(1/64)$$

Continued fraction:

$$\frac{1}{100+\frac{1}{\cdots}} - (-1)^{63/64} \sqrt[64]{\log\left(\frac{1}{2}\tan^{-1}\left(\frac{16\,146\,260\,097}{8\,606\,653\,904}\right)\right)}$$

(using the Hurwitz expansion)

All 64th roots of -log(tan^(-1)(8/2081) + tan^(-1)(1/117) + tan^(-1)(6/667) + tan^(-1)(1/38) + tan^(-1)(4/137) + 2 tan^(-1)(1/7) + tan^(-1)(2/11)):

$$e^0 \left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\hat{}\,(1/64) \approx 0.992438$$ (real, principal root)

$$e^{(i\pi)/32} \left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\hat{}\,(1/64) \approx 0.987659+0.09728\,i$$

$$e^{(i\pi)/16} \left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\hat{}\,(1/64) \approx 0.97337+0.19362\,i$$

$$e^{(3i\pi)/32} \left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\hat{}\,(1/64) \approx 0.94970+0.28809\,i$$

$$e^{(i\pi)/8} \left(-\log\left(\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)\right)\hat{}\,(1/64) \approx 0.91689+0.37979\,i$$

Alternative representations:

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\hat{}\,(1/64) = \left(-\log_e\left(2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)\right)\right)\hat{}\,(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64) = \left(-\log(a)\log_a\left(2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{1}{117}\right)+ \tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)\right)\right)\text{^}(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64) = \left(-\log\left(2\tan^{-1}\left(1,\frac{1}{7}\right)+\tan^{-1}\left(1,\frac{2}{11}\right)+\tan^{-1}\left(1,\frac{1}{38}\right)+\tan^{-1}\left(1,\frac{1}{117}\right)+ \tan^{-1}\left(1,\frac{4}{137}\right)+\tan^{-1}\left(1,\frac{6}{667}\right)+\tan^{-1}\left(1,\frac{8}{2081}\right)\right)\right)\text{^}(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64) = \left(-\log\left(i\left(\log\left(1-\frac{i}{7}\right)-\log\left(1+\frac{i}{7}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{2i}{11}\right)-\log\left(1+\frac{2i}{11}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{i}{38}\right)-\log\left(1+\frac{i}{38}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{i}{117}\right)-\log\left(1+\frac{i}{117}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{4i}{137}\right)-\log\left(1+\frac{4i}{137}\right)\right)+\frac{1}{2}i\left(\log\left(1-\frac{6i}{667}\right)-\log\left(1+\frac{6i}{667}\right)\right)+ \frac{1}{2}i\left(\log\left(1-\frac{8i}{2081}\right)-\log\left(1+\frac{8i}{2081}\right)\right)\right)\right)\text{^}(1/64)$$

Series representations:

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+ 2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64) = \left(-\log\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k 7^{-1-2k}}{1+2k}+\frac{(-1)^k 2^{1+2k}\times 11^{-1-2k}}{1+2k}+\frac{(-1)^k 38^{-1-2k}}{1+2k}+ \frac{(-1)^k 117^{-1-2k}}{1+2k}+\frac{(-1)^k 4^{1+2k}\times 137^{-1-2k}}{1+2k}+ \frac{(-1)^k 6^{1+2k}\times 667^{-1-2k}}{1+2k}+\frac{(-1)^k 8^{1+2k}\times 2081^{-1-2k}}{1+2k}\right)\right)\right)\text{^}(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64)=$$

$$\left(\sum_{k=1}^{\infty}\frac{1}{k}(-1)^k\left(-1+\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)\right)^k\right)\text{^}(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64)=$$

$$\left(-\log\left(\sum_{k=0}^{\infty}\left(\frac{2(-1)^k\,7^{-1-2k}}{1+2k}+\frac{(-1)^k\,38^{-1-2k}}{1+2k}+\frac{(-1)^k\,117^{-1-2k}}{1+2k}+\frac{\left(\frac{11}{2}\right)^{-1-2k}e^{ik\pi}}{1+2k}+\frac{\left(\frac{137}{4}\right)^{-1-2k}e^{ik\pi}}{1+2k}+\frac{\left(\frac{667}{6}\right)^{-1-2k}e^{ik\pi}}{1+2k}+\frac{\left(\frac{2081}{8}\right)^{-1-2k}e^{ik\pi}}{1+2k}\right)\right)\right)\text{^}(1/64)$$

Integral representations:

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64)=$$

$$\left(-\log\left(\int_0^1\left(\frac{14}{49+t^2}+\frac{38}{1444+t^2}+\frac{117}{13689+t^2}+\frac{22}{121+4t^2}+\frac{548}{18769+16t^2}+\frac{4002}{444889+36t^2}+\frac{16648}{4330561+64t^2}\right)dt\right)\right)\text{^}(1/64)$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\text{^}(1/64)=$$

$$\sqrt[64]{-\int_1^{\tan^{-1}\left(\frac{8}{2081}\right)+\tan^{-1}\left(\frac{1}{117}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{1}{38}\right)+\tan^{-1}\left(\frac{4}{137}\right)+2\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{2}{11}\right)}\frac{1}{t}\,dt}$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\hat{}\,(1/64) =$$

$$\left(-\log\left(\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\left(-\frac{i\,2^{-1-s}\times 7^{-1+2\,s}\times 25^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,11^{-1+2\,s}\times 125^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{i\,2^{-3+2\,s}\times 19^{-1+2\,s}\times 1445^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,2^{-2-s}\times 117^{-1+2\,s}\times 6845^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{i\,137^{-1+2\,s}\times 18\,785^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}-\frac{3\,i\,667^{-1+2\,s}\times 444\,925^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{2\,\pi^{3/2}}-\frac{2\,i\,2081^{-1+2\,s}\times 4\,330\,625^{-s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)^2}{\pi^{3/2}}\right)ds\right)\right)\hat{}\,(1/64) \quad \text{for } 0<\gamma<\frac{1}{2}$$

$$\left(-\log\left(\tan^{-1}\left(\frac{2}{11}\right)+\tan^{-1}\left(\frac{4}{137}\right)+\tan^{-1}\left(\frac{6}{667}\right)+\tan^{-1}\left(\frac{8}{2081}\right)+2\tan^{-1}\left(\frac{1}{1\times 7}\right)+\tan^{-1}\left(\frac{1}{2\times 19}\right)+\tan^{-1}\left(\frac{1}{3\times 39}\right)\right)\right)\hat{}\,(1/64) =$$

$$\left(-\log\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\left(-\frac{i\left(\frac{3}{667}\right)^{1-2s}2^{-1-2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,7^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{2\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-1-2s}\times 11^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{-3+2s}\times 19^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,117^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{4\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,16^{-s}\times 137^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}-\frac{i\,2^{1-6s}\times 2081^{-1+2s}\,\Gamma\left(\frac{1}{2}-s\right)\Gamma(1-s)\,\Gamma(s)}{\pi\,\Gamma\left(\frac{3}{2}-s\right)}\right)ds\right)\right)\hat{}\,(1/64) \quad \text{for } 0<\gamma<\frac{1}{2}$$

page 15

For n = 2

1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12)))

Input:

$$1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}$$

Exact result:

$$\frac{622769}{574860}$$

Decimal approximation:

1.0833402915492467731273701422955154298437880527432766238 73...

1.0833402915…

(((1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12))))))^6

Input:

$$\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6$$

Exact result:

$$\frac{58339394534486733902813020585646881}{36088808464277296257958249536000000}$$

Decimal approximation:

1.6165508648542470315123498480569886074885177100227110461 31...

1.61655086485…

Alternate form:

$$\frac{58339394534486733902813020585646881}{36088808464277296257958249536000000}$$

From which:

Input:

$$\frac{1}{10^{35}}\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6$$

Exact result:

58 339 394 534 486 733 902 813 020 585 646 881 /
3 608 880 846 427 729 625 795 824 953 600 000 000 000 000 000 000 000 000 000 000 000 000 000 000

Decimal approximation:

$1.616550864854247031512349848056988607488517710022711 0... \times 10^{-35}$

$1.616550864...*10^{-35}$ result practically equal to the value of Planck length

76(((1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12))))))^6 + Pi - 1/golden ratio

Where 76 is a Lucas number

Input:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$-\frac{1}{\phi}+\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}+\pi$$

Decimal approximation:

125.38142439376267278519664500124499893560420618129538246648...

125.381424… result 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

Property:

$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{1}{\phi}+\pi$$

is a transcendental number

Alternate forms:

$$\left(1\,112\,959\,597\,213\,282\,606\,185\,692\,172\,319\,290\,739-4\,511\,101\,058\,034\,662\,032\,244\,781\,192\,000\,000\sqrt{5}+9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000\,\pi\right)/9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000$$

$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{2}{1+\sqrt{5}}+\pi$$

$$\left(1\,112\,959\,597\,213\,282\,606\,185\,692\,172\,319\,290\,739-4\,511\,101\,058\,034\,662\,032\,244\,781\,192\,000\,000\sqrt{5}\right)/9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000+\pi$$

Alternative representations:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\pi--\frac{1}{2\cos(216\,°)}+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$180\,°--\frac{1}{2\cos(216\,°)}+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\pi-\frac{1}{2\cos\left(\frac{\pi}{5}\right)}+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6$$

Series representations:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{1}{\phi}+4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-$$
$$\frac{1}{\phi}+\sum_{k=0}^{\infty}-\frac{4(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-$$
$$\frac{1}{\phi}+\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{1}{\phi}+4\int_0^1\sqrt{1-t^2}\,dt$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{1}{\phi}+2\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+\pi-\frac{1}{\phi}=$$
$$\frac{1\,108\,448\,496\,155\,247\,944\,153\,447\,391\,127\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{1}{\phi}+2\int_0^\infty\frac{1}{1+t^2}\,dt$$

76(((1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12))))))^6 + 18 - golden ratio

Where 76 and 18 are Lucas numbers

Input:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+18-\phi$$

ϕ is the golden ratio

Result:

$$\frac{1\,270\,848\,134\,244\,495\,777\,314\,259\,514\,039\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\phi$$

Decimal approximation:

139.239831740172879546734001617965496051407036781920276643 8...

139.23983174… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\left(1\,266\,337\,033\,186\,461\,115\,282\,014\,732\,847\,290\,739-4\,511\,101\,058\,034\,662\,032\,244\,781\,192\,000\,000\sqrt{5}\right)/9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000$$

$$(1\,270\,848\,134\,244\,495\,777\,314\,259\,514\,039\,290\,739-9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000\,\phi)/9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000$$

$$\frac{1\,266\,337\,033\,186\,461\,115\,282\,014\,732\,847\,290\,739}{9\,022\,202\,116\,069\,324\,064\,489\,562\,384\,000\,000}-\frac{\sqrt{5}}{2}$$

Alternative representations:

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+18-\phi = 18+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6-2\sin(54\,°)$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+18-\phi = 18+2\cos(216\,°)+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6$$

$$76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6+18-\phi = 18+76\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^6+2\sin(666\,°)$$

29^2(((1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12))))))^9 + 1/golden ratio

Where 29 is a Lucas number

Input:

$$29^2\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^9+\frac{1}{\phi}$$

ϕ is the golden ratio

Result:

$$\frac{1}{\phi}+\frac{11850559963212762958847185773744275981269680140023216889}{6855810659536682399028070448593386575433216000000000}$$

Decimal approximation:

1729.160514479835556494289766430548934726383362208546094708...

1729.160514479…

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

Alternate forms:

$$\left(11\,847\,132\,057\,882\,994\,617\,647\,671\,738\,519\,979\,287\,981\,963\,532\,023\,216\,889 + 3\,427\,905\,329\,768\,341\,199\,514\,035\,224\,296\,693\,287\,716\,608\,000\,000\,000\,\sqrt{5}\right) \Big/ 6\,855\,810\,659\,536\,682\,399\,028\,070\,448\,593\,386\,575\,433\,216\,000\,000\,000$$

$$(11\,850\,559\,963\,212\,762\,958\,847\,185\,773\,744\,275\,981\,269\,680\,140\,023\,216\,889\,\phi + 6\,855\,810\,659\,536\,682\,399\,028\,070\,448\,593\,386\,575\,433\,216\,000\,000\,000) / (6\,855\,810\,659\,536\,682\,399\,028\,070\,448\,593\,386\,575\,433\,216\,000\,000\,000\,\phi)$$

$$\frac{\sqrt{5}}{2} + \frac{11\,847\,132\,057\,882\,994\,617\,647\,671\,738\,519\,979\,287\,981\,963\,532\,023\,216\,889}{6\,855\,810\,659\,536\,682\,399\,028\,070\,448\,593\,386\,575\,433\,216\,000\,000\,000}$$

Alternative representations:

$$29^2\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^{\phi}+\frac{1}{\phi} = 29^2\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^{\phi}+\frac{1}{2\sin(54^\circ)}$$

$$29^2\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^{\phi}+\frac{1}{\phi} = -\frac{1}{2\cos(216^\circ)}+29^2\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^{\phi}$$

$$29^2\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^{\phi}+\frac{1}{\phi} = 29^2\left(1+\frac{2}{24}+\frac{2}{-66+66^3}\right)^{\phi}+-\frac{1}{2\sin(666^\circ)}$$

4*76(((1+2/(3^3-3)+2/(((27*2+12)^3-(27*2+12))))))^6 – 7

Where 4, 76 and 7 are Lucas numbers

Input:

$$4\times 76\left(1+\frac{2}{3^3-3}+\frac{2}{(27\times 2+12)^3-(27\times 2+12)}\right)^6-7$$

Exact result:

$$\frac{1092659642452126627040590656955290739}{2255550529017331016122390596000000}$$

Decimal approximation:

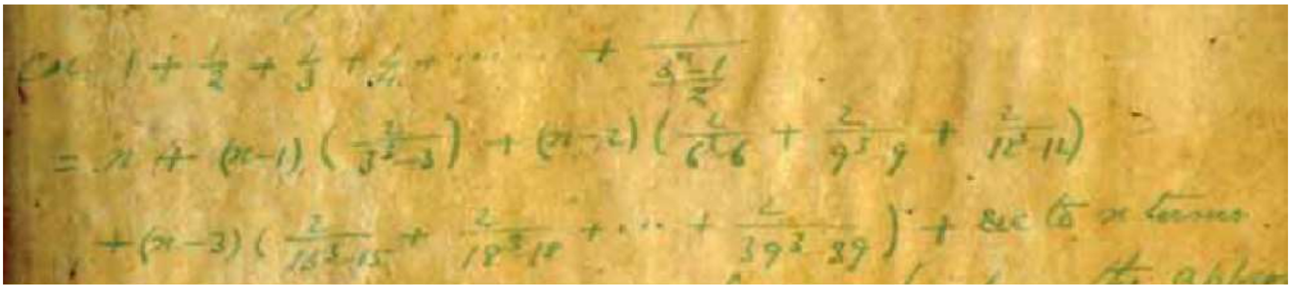
484.4314629156910975797543538093245366765093838469041580239...

484.4314629… result very near to Holographic Ricci dark energy model, where

$$\chi^2_{\rm RDE} = 483.130.$$

Alternate form:

$$\frac{1092659642452126627040590656955290739}{2255550529017331016122390596000000}$$



For n = 5

5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39))))

Input:

$$5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)$$

Exact result:

$$\frac{312854609}{58198140}$$

Decimal approximation:

5.3756805458043848136727393693337965783786217222749730489 66...

5.3756805458…

29(((5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39)))))))-18+golden ratio

Input:

$$29\left(5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-18+\phi$$

ϕ is the golden ratio

Result:

$$\phi+\frac{8\,025\,217\,141}{58\,198\,140}$$

Decimal approximation:

139.51276981707705444471402854504573889070033912577998128 21...

139.5127698… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{8\,054\,316\,211+29\,099\,070\sqrt{5}}{58\,198\,140}$$

$$\frac{58\,198\,140\,\phi+8\,025\,217\,141}{58\,198\,140}$$

$$\frac{8\,054\,316\,211}{58\,198\,140}+\frac{\sqrt{5}}{2}$$

Alternative representations:

$$29\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-18+\phi=-18+29\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)+2\sin(54^\circ)$$

$$29\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-18+\phi=-18-2\cos(216^\circ)+29\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

$$29\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-18+\phi=-18+29\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)-2\sin(666^\circ)$$

29(((5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39)))))))-29-golden ratio

Where 29 is a Lucas number

Input:

$$29\left(5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29-\phi$$

ϕ is the golden ratio

Result:

$$\frac{7385037601}{58198140}-\phi$$

Decimal approximation:

125.27670183957726474830485487631446265525972076616845555579...

125.2767018... result 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

Alternate forms:

$$\frac{7355938531 - 29099070\sqrt{5}}{58198140}$$

$$\frac{7385037601 - 58198140\,\phi}{58198140}$$

$$\frac{7355938531}{58198140} - \frac{\sqrt{5}}{2}$$

Alternative representations:

$$29\left(5 + \frac{(5-1)\,2}{3^3-3} + (5-2)\left(\frac{2}{6^3-6} + \frac{2}{9^3-9} + \frac{2}{12^3-12}\right) + (5-3)\left(\frac{2}{15^3-15} + \frac{2}{18^3-18} + \frac{2}{39^3-39}\right)\right) - 29 - \phi = -29 + 29\left(5 + \frac{8}{24} + 3\left(\frac{2}{-6+6^3} + \frac{2}{-9+9^3} + \frac{2}{-12+12^3}\right) + 2\left(\frac{2}{-15+15^3} + \frac{2}{-18+18^3} + \frac{2}{-39+39^3}\right)\right) - 2\sin(54\,°)$$

$$29\left(5 + \frac{(5-1)\,2}{3^3-3} + (5-2)\left(\frac{2}{6^3-6} + \frac{2}{9^3-9} + \frac{2}{12^3-12}\right) + (5-3)\left(\frac{2}{15^3-15} + \frac{2}{18^3-18} + \frac{2}{39^3-39}\right)\right) - 29 - \phi = -29 + 2\cos(216\,°) + 29\left(5 + \frac{8}{24} + 3\left(\frac{2}{-6+6^3} + \frac{2}{-9+9^3} + \frac{2}{-12+12^3}\right) + 2\left(\frac{2}{-15+15^3} + \frac{2}{-18+18^3} + \frac{2}{-39+39^3}\right)\right)$$

$$29\left(5 + \frac{(5-1)\,2}{3^3-3} + (5-2)\left(\frac{2}{6^3-6} + \frac{2}{9^3-9} + \frac{2}{12^3-12}\right) + (5-3)\left(\frac{2}{15^3-15} + \frac{2}{18^3-18} + \frac{2}{39^3-39}\right)\right) - 29 - \phi = -29 + 29\left(5 + \frac{8}{24} + 3\left(\frac{2}{-6+6^3} + \frac{2}{-9+9^3} + \frac{2}{-12+12^3}\right) + 2\left(\frac{2}{-15+15^3} + \frac{2}{-18+18^3} + \frac{2}{-39+39^3}\right)\right) + 2\sin(666\,°)$$

2*47(((5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39)))))))-29+2Pi

Where 47 and 29 are Lucas numbers

Input:

$$2\times 47\left(5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi$$

Result:

$$\frac{13860293593}{29099070}+2\pi$$

Decimal approximation:

482.59715661279175896216278748393588413598478069259767824448...

482.5971566… result very near to Holographic Ricci dark energy model, where

$\chi^2_{\rm RDE} = 483.130.$

Property:

$\frac{13860293593}{29099070}+2\pi$ is a transcendental number

Alternate form:

$$\frac{13860293593+58198140\pi}{29099070}$$

Alternative representations:

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=$$
$$-29+360\,°+94\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=$$
$$-29-2\,i\log(-1)+94\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=$$
$$-29+2\cos^{-1}(-1)+94\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

Series representations:

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=\frac{13\,860\,293\,593}{29\,099\,070}+8\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=$$
$$\frac{13\,860\,293\,593}{29\,099\,070}+\sum_{k=0}^{\infty}-\frac{8\,(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=$$
$$\frac{13\,860\,293\,593}{29\,099\,070}+2\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=\frac{13\,860\,293\,593}{29\,099\,070}+8\int_0^1\sqrt{1-t^2}\,dt$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=\frac{13\,860\,293\,593}{29\,099\,070}+4\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$2\times 47\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-29+2\pi=\frac{13\,860\,293\,593}{29\,099\,070}+4\int_0^\infty\frac{1}{1+t^2}\,dt$$

322(((5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39)))))))-11+3Pi

Where 322 and 11 are Lucas numbers

Input:

$$322\left(5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi$$

Result:

$$\frac{7\,149\,928\,897}{4\,157\,010}+3\pi$$

Decimal approximation:

1729.393913709781289718010007075321006890507702770666639230...

1729.3939137…

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

Property:

$\frac{7149928897}{4157010} + 3\pi$ is a transcendental number

Alternate form:

$$\frac{7149928897 + 12471030\pi}{4157010}$$

Alternative representations:

$$322\left(5+\frac{(5-1)2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi = -11+540\,°+322\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

$$322\left(5+\frac{(5-1)2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi = -11-3i\log(-1)+322\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

$$322\left(5+\frac{(5-1)2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi = -11+3\cos^{-1}(-1)+322\left(5+\frac{8}{24}+3\left(\frac{2}{-6+6^3}+\frac{2}{-9+9^3}+\frac{2}{-12+12^3}\right)+2\left(\frac{2}{-15+15^3}+\frac{2}{-18+18^3}+\frac{2}{-39+39^3}\right)\right)$$

Series representations:

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+12\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+\sum_{k=0}^{\infty}-\frac{12\,(-1)^k\,1195^{-1-2k}\left(5^{1+2k}-4\times 239^{1+2k}\right)}{1+2k}$$

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+3\sum_{k=0}^{\infty}\left(-\frac{1}{4}\right)^k\left(\frac{1}{1+2k}+\frac{2}{1+4k}+\frac{1}{3+4k}\right)$$

Integral representations:

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+12\int_0^1\sqrt{1-t^2}\,dt$$

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+6\int_0^1\frac{1}{\sqrt{1-t^2}}\,dt$$

$$322\left(5+\frac{(5-1)\,2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)\right)-11+3\pi=\frac{7149928897}{4157010}+6\int_0^{\infty}\frac{1}{1+t^2}\,dt$$

1/10^52((((5/(((5 + (5-1) ((((2/(3^3-3)))))+(5-2) ((((2/(6^3-6))+2/(9^3-9)+2/(12^3-12)))) + (5-3)*((((2/(15^3-15))+2/(18^3-18)+2/(39^3-39)))))))+18/10^2-(47-2)/10^4))))

Where 18, 47 and 2 are Lucas numbers

Input:

$$\frac{1}{10^{52}}\left(\frac{5}{5+(5-1)\times\frac{2}{3^3-3}+(5-2)\left(\frac{2}{6^3-6}+\frac{2}{9^3-9}+\frac{2}{12^3-12}\right)+(5-3)\left(\frac{2}{15^3-15}+\frac{2}{18^3-18}+\frac{2}{39^3-39}\right)}+\frac{18}{10^2}-\frac{47-2}{10^4}\right)$$

Exact result:

691 793 367 759 /
6 257 092 180 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000

Decimal approximation:

$1.1056147933543788706018392076812907045905147588859718\ldots \times 10^{-52}$

$1.1056147933\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}$ m^{-2}

1+1/2+1/3+1/4+1/5+1/6+1/7+1/8+1/9+1/10+1/11+1/12+1/13...

1+1/2+1/3+1/4+1/5+1/6+1/7+1/8+1/9+1/10+1/11+1/12+1/13+1/14+1/15

Input:

$$1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}+\frac{1}{7}+\frac{1}{8}+\frac{1}{9}+\frac{1}{10}+\frac{1}{11}+\frac{1}{12}+\frac{1}{13}+\frac{1}{14}+\frac{1}{15}$$

Exact result:

$$\frac{1195757}{360360}$$

Decimal approximation:

3.318228993228993228993228993228993228993228993228993...

3.3182289932....

And:

3+1/3+1/105+1/360+1/855

Input:

$$3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}$$

Exact result:

$$\frac{3561}{1064}$$

Decimal approximation:

3.346804511278195488721804511278195488721804511278195488721...

3.3468045...

64*(3+1/3+1/105+1/360+1/855)-76+golden ratio

Where 76 is a Lucas number

Input:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-76+\phi$$

ϕ is the golden ratio

Result:

$$\phi+\frac{18380}{133}$$

Decimal approximation:

139.8135227105544061264000755561701493959157979016102741403...

139.8135227… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternate forms:

$$\frac{1}{266}\left(36893+133\sqrt{5}\right)$$

$$\frac{1}{133}(133\phi+18380)$$

$$\frac{36893}{266}+\frac{\sqrt{5}}{2}$$

Alternative representations:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-76+\phi = -76+64\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)+2\sin(54\,°)$$

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-76+\phi = -76-2\cos(216\,°)+64\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)$$

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-76+\phi = -76+64\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-2\sin(666\,°)$$

64*(3+1/3+1/105+1/360+1/855)-89

Where 89 is a Fibonacci number

Input:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-89$$

Exact result:

$$\frac{16651}{133}$$

Decimal approximation:

125.19548872180451127819548872180451127819548872180451127819548872180451127812781...

125.19548872... result 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

64*(3+1/3+1/105+1/360+1/855)*8+13+golden ratio

Where 8 and 13 are Fibonacci numbers

Input:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)\times 8+13+\phi$$

ϕ is the golden ratio

Result:

$$\phi+\frac{229633}{133}$$

Decimal approximation:

1728.181943763185985073768496608801728343284218954241853087...

1728.18194376…

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

Alternate forms:

$$\frac{1}{266}\left(459399+133\sqrt{5}\right)$$

$$\frac{1}{133}(133\phi+229633)$$

$$\frac{459399}{266}+\frac{\sqrt{5}}{2}$$

Alternative representations:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)8+13+\phi=13+512\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)+2\sin(54\,°)$$

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)8+13+\phi=13-2\cos(216\,°)+512\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)$$

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)8+13+\phi = 13+512\left(\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)-2\sin(666°)$$

64*(3+1/3+1/105+1/360+1/855)*2+55

Where 2 are 55 are Fibonacci numbers

Input:

$$64\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)\times 2+55$$

Exact result:

$$\frac{64291}{133}$$

Decimal approximation:

483.39097744360902255639097744360902255639097744360902255563...

483.390977... result practically equal to Holographic Ricci dark energy model, where

$$\chi^2_{\mathrm{RDE}} = 483.130.$$

1/10^52((((3+1/3+1/105+1/360+1/855)*1/Pi +4/10^2 + 3/10^4)))

Where 4 and 3 are Lucas numbers

Input:

$$\frac{1}{10^{52}}\left(\left(3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}\right)\times\frac{1}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}\right)$$

Result:

$$\frac{\frac{403}{10000}+\frac{3561}{1064\pi}}{10000000000000000000000000000000000000000000000000000}$$

Decimal approximation:

$1.1056209630643595689342012807697812842193812001536943\ldots \times 10^{-52}$

1.105620963…*10^{-52} result practically equal to the value of Cosmological Constant 1.1056*10^{-52} m^{-2}

Property:

$$\frac{\frac{403}{10\,000} + \frac{3561}{1064\,\pi}}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$ is a transcendental number

Alternate forms:

$(4\,451\,250 + 53\,599\,\pi)/((1\,330\,000\,\pi)$
$10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000)$

$$\frac{4\,451\,250 + 53\,599\,\pi}{13\,300\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi}$$

$$\frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{3561}{10\,640\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi}$$

Alternative representations:

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}} = \frac{\frac{\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{180\,°} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}}$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}} = \frac{-\frac{\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{i\log(-1)} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}}$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}} = \frac{\frac{\frac{10}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\cos^{-1}(-1)} + \frac{4}{10^2} + \frac{3}{10^4}}{10^{52}}$$

Series representations:

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(42\,560\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}\right)$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(42\,560\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \frac{(-1)^{1+k}\, 1195^{-1-2k} \left(5^{1+2k} - 4 \times 239^{1+2k}\right)}{1+2k}\right)$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(10\,640\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \sum_{k=0}^{\infty} \left(-\frac{1}{4}\right)^k \left(\frac{1}{1+2k} + \frac{2}{1+4k} + \frac{1}{3+4k}\right)\right)$$

Integral representations:

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(42\,560\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^1 \sqrt{1-t^2}\,dt\right)$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(21\,280\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^\infty \frac{1}{1+t^2}\,dt\right)$$

$$\frac{\frac{3+\frac{1}{3}+\frac{1}{105}+\frac{1}{360}+\frac{1}{855}}{\pi}+\frac{4}{10^2}+\frac{3}{10^4}}{10^{52}} = \frac{403}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + 3561 \Big/ \left(21\,280\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000 \int_0^1 \frac{1}{\sqrt{1-t^2}}\,dt\right)$$

Appendix

From:

Three-dimensional AdS gravity and extremal CFTs at c = 8m

Spyros D. Avramis, Alex Kehagiasb and Constantina Mattheopoulou

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m	L_0	d	S	S_{BH}
3	1	196883	12.1904	12.5664
	2	21296876	16.8741	17.7715
	3	842609326	20.5520	21.7656
4	2/3	139503	11.8458	11.8477
	5/3	69193488	18.0524	18.7328
	8/3	6928824200	22.6589	23.6954
5	1/3	20619	9.9340	9.3664
	4/3	86645620	18.2773	18.7328
	7/3	24157197490	23.9078	24.7812

m	L_0	d	S	S_{BH}
6	1	42987519	17.5764	17.7715
	2	40448921875	24.4233	25.1327
	3	8463511703277	29.7668	30.7812
7	2/3	7402775	15.8174	15.6730
	5/3	33934039437	24.2477	24.7812
	8/3	16953652012291	30.4615	31.3460
8	1/3	278511	12.5372	11.8477
	4/3	13996384631	23.3621	23.6954
	7/3	19400406113385	30.5963	31.3460

Table 1: Degeneracies, microscopic entropies and semiclassical entropies for the first few values of m and L_0.

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References

MANUSCRIPT BOOK 1 OF SRINIVASA RAMANUJAN