On some Ramanujan's equations of Manuscript Book 2. Further new possible mathematical connections with some parameters of Particle Physics and Cosmology. V

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Abstract

In this research thesis, we continue to analyze and deepen further Ramanujan's equations of Manuscript Book 2 and describe new possible mathematical connections with some parameters of Particle Physics and Cosmology.

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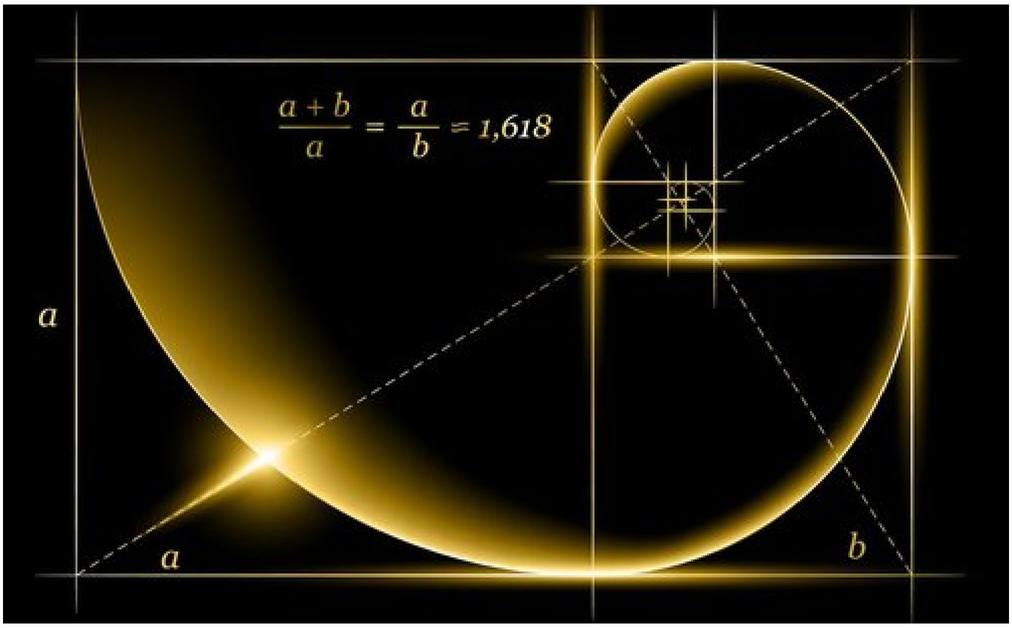
From : http://scienceofhindu.blogspot.com/2016/04/man-who-knew-infinity-by-ramana.html (modified by A. Nardelli)



https://kindtrainer.com/fractalbliss

From: **Manuscript Book 2 of Srinivasa Ramanujan**

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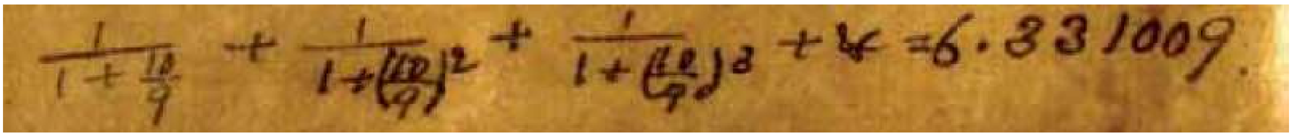
Examples of infinite sum



1/(1+(10/9))+1/(1+(10/9)^2)+1/(1+(10/9)^3)+...

Input interpretation:

$$\frac{1}{1+\frac{10}{9}} + \frac{1}{1+\left(\frac{10}{9}\right)^2} + \frac{1}{1+\left(\frac{10}{9}\right)^3} + \cdots$$

Infinite sum:

$$\sum_{n=1}^{\infty} \frac{1}{\left(\frac{10}{9}\right)^n + 1} = \frac{i \operatorname{Im}\left(\psi_{\frac{9}{10}}^{(0)}\left(1 - \frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)} + \frac{\operatorname{Re}\left(\psi_{\frac{9}{10}}^{(0)}\left(1 - \frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)} - \frac{\log(10)}{\log\left(\frac{10}{9}\right)}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

$\operatorname{Im}(z)$ is the imaginary part of z

$\operatorname{Re}(z)$ is the real part of z

Decimal approximation:

6.331008692864745537718386879838180649341260412564743295777...

6.331008692…

Convergence tests:

By the ratio test, the series converges.

Partial sum formula:

$$\sum_{n=1}^{m} \frac{1}{1+\left(\frac{10}{9}\right)^n} = \frac{\psi_{\frac{9}{10}}^{(0)}\left(-\frac{i\pi - \log\left(\frac{10}{9}\right)}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)} - \frac{\psi_{\frac{9}{10}}^{(0)}\left(-\frac{i\pi - (m+1)\log\left(\frac{10}{9}\right)}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}$$

Alternate forms:

$$-\frac{\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}$$

$$-\frac{\log(10)}{\log\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}$$

$$\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(\frac{-i\pi-2\log(3)+\log(10)}{-2\log(3)+\log(10)}\right)}{\log(10)-2\log(3)}$$

Series representations:

$$\frac{i\,\mathrm{Im}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}-\frac{\log(10)}{\log\left(\frac{10}{9}\right)}+\frac{\mathrm{Re}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}=$$

$$-\left(\left(2\pi\left\lfloor\frac{\arg(10-x)}{2\pi}\right\rfloor-\mathrm{Im}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}}\right)\right)-\right.\right.$$

$$i\log(x)+i\,\mathrm{Re}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}}\right)\right)+$$

$$\left.i\sum_{k=1}^{\infty}\frac{(-1)^k(10-x)^k x^{-k}}{k}\right)\Bigg/$$

$$\left.\left(2\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor-i\log(x)+i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}\right)\right)\quad\text{for } x<0$$

$$\frac{i\,\mathrm{Im}\left(\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}-\frac{\log(10)}{\log\left(\frac{10}{9}\right)}+\frac{\mathrm{Re}\left(\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}=$$

$$-\left(\left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-\mathrm{Im}\left(\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)\right)-i\log(z_0)+\right.\right.$$

$$i\,\mathrm{Re}\left(\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)\right)+$$

$$\left.i\sum_{k=1}^{\infty}\frac{(-1)^k\,(10-z_0)^k\,z_0^{-k}}{k}\right)\Bigg/$$

$$\left.\left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-i\log(z_0)+i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)\right)$$

$$\frac{i\,\mathrm{Im}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}-\frac{\log(10)}{\log\left(\frac{10}{9}\right)}+\frac{\mathrm{Re}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)}{\log\left(\frac{10}{9}\right)}=$$

$$\left(i\,\mathrm{Im}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)\right)-\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-\log(z_0)-\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log(z_0)+\mathrm{Re}\left(\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)\right)+\sum_{k=1}^{\infty}\frac{(-1)^k(10-z_0)^k z_0^{-k}}{k}\right)\Bigg/\left(\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)$$

34/10^2 + (((1/(1+(10/9))+1/(1+(10/9)^2)+1/(1+(10/9)^3)+...)))

Input interpretation:

$$\frac{34}{10^2}+\left(\frac{1}{1+\frac{10}{9}}+\frac{1}{1+\left(\frac{10}{9}\right)^2}+\frac{1}{1+\left(\frac{10}{9}\right)^3}+\cdots\right)$$

Result:

$$\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

Alternate forms:

$$\frac{50\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)+17\log\left(\frac{10}{9}\right)-50\log(10)}{50\log\left(\frac{10}{9}\right)}$$

$$\frac{17\log\left(\frac{10}{9}\right)-50\log(10)}{50\log\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}$$

$$\frac{50\,\psi^{(0)}_{\frac{9}{10}}\left(\frac{-i\pi-2\log(3)+\log(10)}{-2\log(3)+\log(10)}\right)-34\log(3)-33\log(10)}{50\,(\log(10)-2\log(3))}$$

From which:

Input interpretation:

$$\frac{\frac{34}{10^2}+\left(\frac{1}{1+\frac{10}{9}}+\frac{1}{1+\left(\frac{10}{9}\right)^2}+\frac{1}{1+\left(\frac{10}{9}\right)^3}+\cdots\right)}{10^{11}}$$

Result:

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

Input:

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000}$$

Decimal approximation:

$6.671008692864745537718386879838180649341260412564743 2\ldots \times 10^{-11}$

6.671008692...*10^{-11} result practically to the value of Gravitational Constant

Alternate forms:

$$\frac{50\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)+17\log\left(\frac{10}{9}\right)-50\log(10)}{5\,000\,000\,000\,000\log\left(\frac{10}{9}\right)}$$

$$\frac{17\log\left(\frac{10}{9}\right)-50\log(10)}{5\,000\,000\,000\,000\log\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{100\,000\,000\,000\log\left(\frac{10}{9}\right)}$$

$$\frac{50\,\psi^{(0)}_{\frac{9}{10}}\left(\frac{-i\pi-2\log(3)+\log(10)}{-2\log(3)+\log(10)}\right)-34\log(3)-33\log(10)}{5\,000\,000\,000\,000\,(\log(10)-2\log(3))}$$

Alternative representations:

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000}=\frac{\frac{17}{50}+\frac{-\log(a)\log_a(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log(a)\log_a\left(\frac{10}{9}\right)}\right)}{\log(a)\log_a\left(\frac{10}{9}\right)}}{100\,000\,000\,000}$$

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000}=\frac{\frac{17}{50}+\frac{-\log_e(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log_e\left(\frac{10}{9}\right)}\right)}{\log_e\left(\frac{10}{9}\right)}}{100\,000\,000\,000}$$

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000}=\frac{\frac{17}{50}+-\frac{\mathrm{Li}_1(-9)+\psi^{(0)}_{\frac{9}{10}}\left(1--\frac{i\pi}{\mathrm{Li}_1\left(1-\frac{10}{9}\right)}\right)}{\mathrm{Li}_1\left(1-\frac{10}{9}\right)}}{100\,000\,000\,000}$$

Series representations:

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000} =$$

$$-\left(\left(-34\,\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\,\pi}\right\rfloor+100\,\pi\left\lfloor\frac{\arg(10-x)}{2\,\pi}\right\rfloor-33\,i\log(x)+50\,i\right.\right.$$

$$\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{2\,i\,\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}}\right)-$$

$$\left.17\,i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}+50\,i\sum_{k=1}^{\infty}\frac{(-1)^k\,(10-x)^k\,x^{-k}}{k}\right)\Bigg/$$

$$\left.\left(5\,000\,000\,000\,000\left(2\,\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\,\pi}\right\rfloor-i\log(x)+i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}\right)\right)\right)$$

for $x < 0$

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000} = -\left(\left(\left(66\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-33\,i\log(z_0)+\right.\right.\right.$$

$$50\,i\,\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{2\,i\,\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)-$$

$$17\,i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}+$$

$$\left.50\,i\sum_{k=1}^{\infty}\frac{(-1)^k\,(10-z_0)^k\,z_0^{-k}}{k}\right)\Bigg/\left(5\,000\,000\,000\,000\right.$$

$$\left.\left.\left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-i\log(z_0)+i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)\right)\right)$$

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000} =$$

$$-\left(\left(-17\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+50\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+33\log(z_0)-\right.\right.$$

$$17\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log(z_0)+50\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log(z_0)-50\,\psi^{(0)}_{\frac{9}{10}}\left(\right.$$

$$\left.1-\frac{i\pi}{\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)+$$

$$\left.17\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}-50\sum_{k=1}^{\infty}\frac{(-1)^k(10-z_0)^k z_0^{-k}}{k}\right)\Big/$$

$$\left(5\,000\,000\,000\,000\left(\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\log(z_0)+\right.\right.$$

$$\left.\left.\left.\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)\right)\right)$$

Integral representations:

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000} = \frac{17\int_1^{\frac{10}{9}}\frac{1}{t}\,dt-50\int_1^{10}\frac{1}{t}\,dt+50\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\int_1^{\frac{10}{9}}\frac{1}{t}\,dt}\right)}{5\,000\,000\,000\,000\int_1^{\frac{10}{9}}\frac{1}{t}\,dt}$$

$$\frac{\frac{17}{50}+\frac{-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log\left(\frac{10}{9}\right)}}{100\,000\,000\,000} = -\left(\left(50\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds - 17\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds - 100\,i\,\pi\,\psi^{(0)}_{\frac{9}{10}}\left(1+\frac{2\pi^2}{\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^s\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}\right)\right)\Big/\left(5\,000\,000\,000\,000\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^s\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)\right) \quad \text{for } -1<\gamma<0$$

((((1/(1+(10/9))+1/(1+(10/9)^2)+1/(1+(10/9)^3)+...)))i)^4

Input interpretation:

$$\left(\left(\frac{1}{1+\frac{10}{9}}+\frac{1}{1+\left(\frac{10}{9}\right)^2}+\frac{1}{1+\left(\frac{10}{9}\right)^3}+\cdots\right)i\right)^4$$

i is the imaginary unit

Result:

$$\frac{\left(-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

Alternate forms:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

$$\frac{\left(-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(\frac{-i\pi-2\log(3)+\log(10)}{-2\log(3)+\log(10)}\right)\right)^4}{(\log(10)-2\log(3))^4}$$

$$-\frac{4\log(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^3}{\log^4\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^4}{\log^4\left(\frac{10}{9}\right)}-\frac{4\log^3(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log^4\left(\frac{10}{9}\right)}+\frac{6\log^2(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^2}{\log^4\left(\frac{10}{9}\right)}+\frac{\log^4(10)}{\log^4\left(\frac{10}{9}\right)}$$

From:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

that is:

(log(10) - QPolyGamma(0, 1 - (i π)/log(10/9), 9/10))^4/(log^4(10/9))

we obtain:

Input:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

i is the imaginary unit

Decimal approximation:

1606.540355693850581318901798130314953989878211993232234372...

1606.54….

Alternate forms:

$$\frac{\left(-\log(10)+\psi^{(0)}_{\frac{9}{10}}\left(\frac{-i\pi-2\log(3)+\log(10)}{-2\log(3)+\log(10)}\right)\right)^4}{(\log(10)-2\log(3))^4}$$

$$-\frac{4\log(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^3}{\log^4\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^4}{\log^4\left(\frac{10}{9}\right)}-\frac{4\log^3(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log^4\left(\frac{10}{9}\right)}+\frac{6\log^2(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^2}{\log^4\left(\frac{10}{9}\right)}+\frac{\log^4(10)}{\log^4\left(\frac{10}{9}\right)}$$

$$\frac{\left(-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)+\log(2)+\log(5)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

Alternative representations:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \frac{\left(\log_e(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log_e\left(\frac{10}{9}\right)}\right)\right)^4}{\log_e^4\left(\frac{10}{9}\right)}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \frac{\left(\log(a)\log_a(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log(a)\log_a\left(\frac{10}{9}\right)}\right)\right)^4}{\left(\log(a)\log_a\left(\frac{10}{9}\right)\right)^4}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \frac{\left(-\text{Li}_1(-9)-\psi^{(0)}_{\frac{9}{10}}\left(1--\frac{i\pi}{\text{Li}_1\left(1-\frac{10}{9}\right)}\right)\right)^4}{\left(-\text{Li}_1\left(1-\frac{10}{9}\right)\right)^4}$$

Series representations:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \left(2\pi\left\lfloor\frac{\arg(10-x)}{2\pi}\right\rfloor - i\log(x) + i\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}}\right) + i\sum_{k=1}^{\infty}\frac{(-1)^k (10-x)^k x^{-k}}{k}\right)^4 \Big/ \left(2\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor - i\log(x) + i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}\right)^4 \quad \text{for } x<0$$

$$\frac{\left(\log(10)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor - i\log(z_0) + i\,\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{2i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor + \log(z_0) - \sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right) + i\sum_{k=1}^{\infty}\frac{(-1)^k\,(10-z_0)^k\,z_0^{-k}}{k}\right)^4 \Bigg/ \left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor - i\log(z_0) + i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)^4$$

$$\frac{\left(\log(10)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \left(\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right) + \log(z_0) + \left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log(z_0) - \psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log(z_0) + \left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right) - \sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right) - \sum_{k=1}^{\infty}\frac{(-1)^k\,(10-z_0)^k\,z_0^{-k}}{k}\right)^4 \Bigg/ \left(\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right) + \log(z_0) + \left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log(z_0) - \sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)^4$$

Integral representations:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \frac{\left(\int_1^{10}\frac{1}{t}\,dt-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\int_1^{\frac{10}{9}}\frac{1}{t}\,dt}\right)\right)^4}{\left(\int_1^{\frac{10}{9}}\frac{1}{t}\,dt\right)^4}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)} = \frac{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds-2\,i\,\pi\,\psi^{(0)}_{\frac{9}{10}}\left(1+\frac{2\pi^2}{\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^s\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}\right)\right)^4}{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^s\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^4} \quad \text{for } -1<\gamma<0$$

From which:

(log(10) - QPolyGamma(0, 1 - (i π)/log(10/9), 9/10))^4/(log^4(10/9)) + 64 + golden ratio

Input:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

i is the imaginary unit

ϕ is the golden ratio

Decimal approximation:

1672.158389682600476167106384964680592107598521173037997234...

1672.1583896…. result practically equal to the rest mass of Omega baryon 1672.45

Alternate forms:

$$\frac{1}{2}\left(129+\sqrt{5}\right)+\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}$$

$$\frac{1}{2\log^4\left(\frac{10}{9}\right)}\left(-8\log^3(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)+\right.$$
$$12\log^2(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^2-8\log(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^3+$$
$$\left.2\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^4+129\log^4\left(\frac{10}{9}\right)+\sqrt{5}\,\log^4\left(\frac{10}{9}\right)+2\log^4(10)\right)$$

$$-\frac{4\log(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^3}{\log^4\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^4}{\log^4\left(\frac{10}{9}\right)}-\frac{4\log^3(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)}{\log^4\left(\frac{10}{9}\right)}+$$
$$\frac{6\log^2(10)\,\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)^2}{\log^4\left(\frac{10}{9}\right)}+64+\frac{1}{2}\left(1+\sqrt{5}\right)+\frac{\log^4(10)}{\log^4\left(\frac{10}{9}\right)}$$

Alternative representations:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi=64+\phi+\frac{\left(\log_e(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log_e\left(\frac{10}{9}\right)}\right)\right)^4}{\log_e^4\left(\frac{10}{9}\right)}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi=$$
$$64+\phi+\frac{\left(\log(a)\log_a(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log(a)\log_a\left(\frac{10}{9}\right)}\right)\right)^4}{\left(\log(a)\log_a\left(\frac{10}{9}\right)\right)^4}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi=64+\phi+\frac{\left(-\text{Li}_1(-9)-\psi^{(0)}_{\frac{9}{10}}\left(1--\frac{i\pi}{\text{Li}_1\left(1-\frac{10}{9}\right)}\right)\right)^4}{\left(-\text{Li}_1\left(1-\frac{10}{9}\right)\right)^4}$$

Series representations:

$$\frac{\left(\log(10)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi=64+\phi+\left(2 i \pi \left\lfloor\frac{\arg(10-x)}{2\pi}\right\rfloor+\log(x)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{2 i\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}}\right)-\sum_{k=1}^{\infty}\frac{(-1)^k (10-x)^k x^{-k}}{k}\right)^4 \Bigg/ \left(2 i\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}\right)^4 \quad \text{for } x<0$$

$$\frac{\left(\log(10)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi=64+\phi+\left(\log(z_0)+\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\psi_{\frac{9}{10}}^{(0)}\left(1-\frac{i\pi}{\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)-\sum_{k=1}^{\infty}\frac{(-1)^k (10-z_0)^k z_0^{-k}}{k}\right)^4 \Bigg/ \left(\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)^4$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi =$$

$$64+\phi+\left(2 i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{2 i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}\right)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(10-z_0)^k\,z_0^{-k}}{k}\right)^4 \Bigg/ \left(2 i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}\right)^4$$

Integral representations:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi = 64+\phi+\frac{\left(\int_1^{10}\frac{1}{t}\,dt-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\int_1^{\frac{10}{9}}\frac{1}{t}\,dt}\right)\right)^4}{\left(\int_1^{\frac{10}{9}}\frac{1}{t}\,dt\right)^4}$$

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}\left(1-\frac{i\pi}{\log\left(\frac{10}{9}\right)}\right)\right)^4}{\log^4\left(\frac{10}{9}\right)}+64+\phi = 64+\phi+$$

$$\frac{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds-2 i\pi\,\psi^{(0)}_{\frac{9}{10}}\left(1+\frac{2\pi^2}{\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}\right)\right)^4}{\left(\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{9^{s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)^4} \quad \text{for } -1<\gamma<0$$

$\Gamma(x)$ is the gamma function

Now:

Input interpretation:

convert 1672.1583896 MeV/c^2 to kilograms

Result:

$2.980893088 \times 10^{-27}$ kg (kilograms)

$2.980893088*10^{-27}$

Inserting the mass of Omega baryon in kg in the Hawking radiation calculator, equating the particle as a quantum black hole, we obtain:

2.980893088e-27 Kg = 2.980893e-27 = Mass

and:

Radius = 4.426184e-54,   Temperature = 4.116898e+49

From the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(2.980893e-27)* sqrt[[-((((4.116898e+49 * 4*Pi*(4.426184e-54)^3-(4.426184e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times\frac{1}{2.980893\times 10^{-27}}\sqrt{-\frac{4.116898\times 10^{49}\times 4\pi(4.426184\times 10^{-54})^3-(4.426184\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)}$$

Result:

1.618249151933934965181261092236425669311438199662797949701...

1.61824915193….

and:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*((11Pi)/(199+7))^2)))*1/(2.980893e-27)* sqrt[[-((((4.116898e+49 * 4*Pi*(4.426184e-54)^3-(4.426184e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1\Big/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{11\pi}{199+7}\right)^2}\times\frac{1}{2.980893\times 10^{-27}}\sqrt{-\frac{4.116898\times 10^{49}\times 4\,\pi\,(4.426184\times 10^{-54})^3-(4.426184\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right)}$$

Result:

3.141805805878682075280841709346146312458152935922769297567...

3.1418058058….

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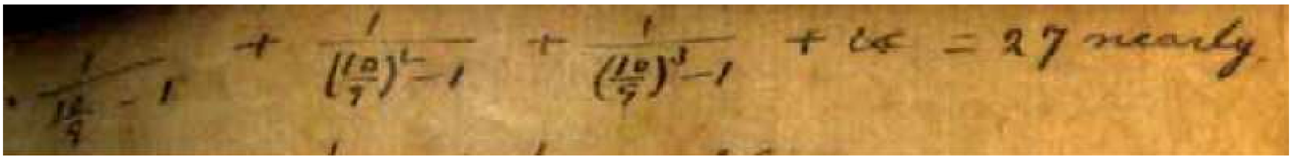


1/((10/9)-1)+1/((10/9)^2-1)+1/((10/9)^3-1)+...

Input interpretation:

$$\frac{1}{\frac{10}{9}-1}+\frac{1}{\left(\frac{10}{9}\right)^2-1}+\frac{1}{\left(\frac{10}{9}\right)^3-1}+\cdots$$

Infinite sum:

$$\sum_{n=1}^{\infty}\frac{1}{\left(\frac{10}{9}\right)^n-1}=\frac{\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

Decimal approximation:

27.08648503406816780327872576570091022140786017495536508019...

27.08648503…

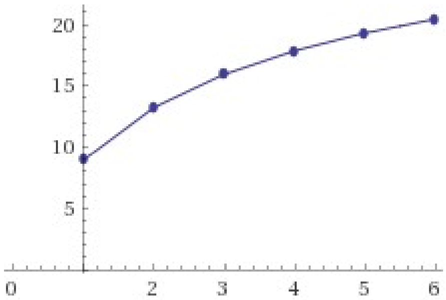
Convergence tests:

By the ratio test, the series converges.

Partial sum formula:

$$\sum_{n=1}^{m} \frac{1}{-1+\left(\frac{10}{9}\right)^n} = \frac{\psi^{(0)}_{\frac{9}{10}}(m+1)}{\log\left(\frac{10}{9}\right)} - \frac{\psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)}$$

Partial sums:



Alternate forms:

$$-\frac{\psi^{(0)}_{\frac{9}{10}}(1) - \log(10)}{\log(10) - 2\log(3)}$$

$$\frac{\log(10)}{\log\left(\frac{10}{9}\right)} - \frac{\psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)}$$

$$-\frac{\psi^{(0)}_{\frac{9}{10}}(1)}{\log(2) - 2\log(3) + \log(5)} + \frac{\log(2)}{\log(2) - 2\log(3) + \log(5)} + \frac{\log(5)}{\log(2) - 2\log(3) + \log(5)}$$

Series representations:

$$\frac{\log(10) - \psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)} = \frac{2\pi\left\lfloor\frac{\arg(10-x)}{2\pi}\right\rfloor - i\log(x) + i\,\psi^{(0)}_{\frac{9}{10}}(1) + i\sum_{k=1}^{\infty}\frac{(-1)^k (10-x)^k x^{-k}}{k}}{2\pi\left\lfloor\frac{\arg\left(\frac{10}{9}-x\right)}{2\pi}\right\rfloor - i\log(x) + i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-x\right)^k x^{-k}}{k}} \quad \text{for } x < 0$$

$$\frac{\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)} = \frac{2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor - i\log(z_0) + i\,\psi^{(0)}_{\frac{9}{10}}(1) + i\sum_{k=1}^{\infty}\frac{(-1)^k (10-z_0)^k z_0^{-k}}{k}}{2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor - i\log(z_0) + i\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}$$

$$\frac{\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)}{\log\left(\frac{10}{9}\right)} = \frac{\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\log(z_0)+\left\lfloor\frac{\arg(10-z_0)}{2\pi}\right\rfloor\log(z_0)-\psi^{(0)}_{\frac{9}{10}}(1)-\sum_{k=1}^{\infty}\frac{(-1)^k(10-z_0)^k z_0^{-k}}{k}}{\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\log(z_0)+\left\lfloor\frac{\arg\left(\frac{10}{9}-z_0\right)}{2\pi}\right\rfloor\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k\left(\frac{10}{9}-z_0\right)^k z_0^{-k}}{k}}$$

((((((1/((10/9)-1)+1/((10/9)^2-1)+1/((10/9)^3-1)+...))))))^2

Input interpretation:

$$\left(\frac{1}{\frac{10}{9}-1}+\frac{1}{\left(\frac{10}{9}\right)^2-1}+\frac{1}{\left(\frac{10}{9}\right)^3-1}+\cdots\right)^2$$

Result:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{\log^2\left(\frac{10}{9}\right)}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

Alternate forms:

$$\frac{\left(\psi^{(0)}_{\frac{9}{10}}(1)-\log(10)\right)^2}{(\log(10)-2\log(3))^2}$$

$$-\frac{2\,\psi^{(0)}_{\frac{9}{10}}(1)\log(10)}{\log^2\left(\frac{10}{9}\right)}+\frac{\psi^{(0)}_{\frac{9}{10}}(1)^2}{\log^2\left(\frac{10}{9}\right)}+\frac{\log^2(10)}{\log^2\left(\frac{10}{9}\right)}$$

$$\frac{\left(-\psi^{(0)}_{\frac{9}{10}}(1)+\log(2)+\log(5)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}$$

From:

$$\frac{\left(-\psi_{\frac{9}{10}}^{(0)}(1)+\log(2)+\log(5)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}$$

that is

(log(2) + log(5) - QPolyGamma(0, 1, 9/10))^2/(log(2) - 2 log(3) + log(5))^2

we obtain:

Input:

$$\frac{\left(\log(2)+\log(5)-\psi_{\frac{9}{10}}^{(0)}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

Decimal approximation:

733.6776715007988335226243700158996375199355977400390292164...

733.6776715…

Alternate forms:

$$\frac{\left(\log(10)-\psi_{\frac{9}{10}}^{(0)}(1)\right)^2}{\log^2\left(\frac{10}{9}\right)}$$

$$\frac{\left(\psi_{\frac{9}{10}}^{(0)}(1)-\log(10)\right)^2}{(\log(10)-2\log(3))^2}$$

$$-\frac{2\,\psi_{\frac{9}{10}}^{(0)}(1)\log(2)}{(\log(2)-2\log(3)+\log(5))^2}-\frac{2\,\psi_{\frac{9}{10}}^{(0)}(1)\log(5)}{(\log(2)-2\log(3)+\log(5))^2}+\frac{\psi_{\frac{9}{10}}^{(0)}(1)^2}{(\log(2)-2\log(3)+\log(5))^2}+\frac{\log^2(2)}{(\log(2)-2\log(3)+\log(5))^2}+\frac{\log^2(5)}{(\log(2)-2\log(3)+\log(5))^2}+\frac{2\log(2)\log(5)}{(\log(2)-2\log(3)+\log(5))^2}$$

Alternative representations:

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}=\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(-2\log(3)+\log(10))^2}$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}=\frac{\left(\log_e(2)+\log_e(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log_e(2)-2\log_e(3)+\log_e(5))^2}$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}=\frac{\left(\log(a)\log_a(2)+\log(a)\log_a(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(a)\log_a(2)-2\log(a)\log_a(3)+\log(a)\log_a(5))^2}$$

Series representations:

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}=$$
$$-\frac{\left(4\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-2i\log(z_0)+i\psi^{(0)}_{\frac{9}{10}}(1)-i\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}\right)^2}{\left(\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}+2\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)^2}$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}=\left(2\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor+2\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-2i\log(x)+i\psi^{(0)}_{\frac{9}{10}}(1)-i\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-x)^k+(5-x)^k\right)x^{-k}}{k}\right)^2\Big/$$
$$\left(2\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor-4\pi\left\lfloor\frac{\arg(3-x)}{2\pi}\right\rfloor+2\pi\left\lfloor\frac{\arg(5-x)}{2\pi}\right\rfloor-i\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-x)^k+(5-x)^k\right)x^{-k}}{k}-2i\sum_{k=1}^{\infty}\frac{(-1)^k(3-x)^k x^{-k}}{k}\right)^2 \quad \text{for } x<0$$

$$\frac{\left(\log(2)+\log(5)-\psi_{\frac{9}{10}}^{(0)}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2} =$$

$$\left(\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right)+2\log(z_0)+\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor \log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor \log(z_0)-\psi_{\frac{9}{10}}^{(0)}(1)+\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}\right)^2 \Big/$$

$$\left(\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right)-2\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor \log\left(\frac{1}{z_0}\right)+\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor \log(z_0)-2\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor \log(z_0)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor \log(z_0)+\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}+2\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)^2$$

From which:

(log(2) + log(5) - QPolyGamma(0, 1, 9/10))^2/(log(2) - 2 log(3) + log(5))^2 + 47 + golden ratio

Input:

$$\frac{\left(\log(2)+\log(5)-\psi_{\frac{9}{10}}^{(0)}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi$$

$\log(x)$ is the natural logarithm

$\psi_q(z)$ gives the q-digamma function

ϕ is the golden ratio

Decimal approximation:

782.2957054895487283708289568502652756376559069198447920785...

782.2957054…. result practically equal to the rest mass of Omega meson 782.65

Alternate forms:

$$\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{\log^2\left(\frac{10}{9}\right)}+\phi+47$$

$$\frac{\left(-\psi^{(0)}_{\frac{9}{10}}(1)+\log(2)+\log(5)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+\frac{1}{2}\left(95+\sqrt{5}\right)$$

$$\left(\psi^{(0)}_{\frac{9}{10}}(1)^2-2\,\psi^{(0)}_{\frac{9}{10}}(1)\,(\log(2)+\log(5))+\phi\,(\log(2)-2\log(3)+\log(5))^2+4\left(12\log^2(2)+47\log^2(3)+12\log^2(5)-47\log(3)\log(5)+\log(2)\,(24\log(5)-47\log(3))\right)\right)\Big/(\log(2)-2\log(3)+\log(5))^2$$

Alternative representations:

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi=47+\phi+\frac{\left(\log(10)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(-2\log(3)+\log(10))^2}$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi=47+\phi+\frac{\left(\log_e(2)+\log_e(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{\left(\log_e(2)-2\log_e(3)+\log_e(5)\right)^2}$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi=47+\phi+\frac{\left(\log(a)\log_a(2)+\log(a)\log_a(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(a)\log_a(2)-2\log(a)\log_a(3)+\log(a)\log_a(5))^2}$$

Series representations:

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi = 47+\phi+\left(4 i \pi \left\lfloor \frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi} \right\rfloor + 2\log(z_0) - \psi^{(0)}_{\frac{9}{10}}(1) + \sum_{k=1}^{\infty} \frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right) z_0^{-k}}{k}\right)^2 \Bigg/ \left(4 i \pi \left\lfloor \frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi} \right\rfloor + 2\log(z_0) + \sum_{k=1}^{\infty} \frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right) z_0^{-k}}{k} - 2\left(2 i \pi \left\lfloor \frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi} \right\rfloor + \log(z_0) - \sum_{k=1}^{\infty} \frac{(-1)^k (3-z_0)^k z_0^{-k}}{k}\right)\right)^2$$

$$\frac{\left(\log(2)+\log(5)-\psi^{(0)}_{\frac{9}{10}}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi = 47+\phi+\left(2 i \pi \left\lfloor \frac{\arg(2-x)}{2\pi} \right\rfloor + 2 i \pi \left\lfloor \frac{\arg(5-x)}{2\pi} \right\rfloor + 2\log(x) - \psi^{(0)}_{\frac{9}{10}}(1) + \sum_{k=1}^{\infty} \frac{(-1)^{1+k}\left((2-x)^k+(5-x)^k\right) x^{-k}}{k}\right)^2 \Bigg/ \left(2 i \pi \left\lfloor \frac{\arg(2-x)}{2\pi} \right\rfloor + 2 i \pi \left\lfloor \frac{\arg(5-x)}{2\pi} \right\rfloor + 2\log(x) + \sum_{k=1}^{\infty} \frac{(-1)^{1+k}\left((2-x)^k+(5-x)^k\right) x^{-k}}{k} - 2\left(2 i \pi \left\lfloor \frac{\arg(3-x)}{2\pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{(-1)^k (3-x)^k x^{-k}}{k}\right)\right)^2 \quad \text{for } x < 0$$

$$\frac{\left(\log(2)+\log(5)-\psi_{\frac{9}{10}}^{(0)}(1)\right)^2}{(\log(2)-2\log(3)+\log(5))^2}+47+\phi=47+\phi+$$
$$\left(2\log(z_0)+\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\right.$$
$$\left.\psi_{\frac{9}{10}}^{(0)}(1)+\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}\right)^2 \Bigg/$$
$$\left(2\log(z_0)+\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)+\left\lfloor\frac{\arg(5-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)+\right.$$
$$\sum_{k=1}^{\infty}\frac{(-1)^{1+k}\left((2-z_0)^k+(5-z_0)^k\right)z_0^{-k}}{k}-$$
$$\left.2\left(\log(z_0)+\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)\right)^2$$

From the rest mass of Omega meson in kg, from the Ramanujan-Nardelli mock formula, we obtain:

Input interpretation:

convert 782.29570548 MeV/c^2 to kilograms

Result:

$1.3945687656\times10^{-27}$ kg (kilograms)

$1.3945687656*10^{-27}$ kg

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(1.394569e-27)* sqrt[[-((((8.799876e+49 * 4*Pi*(2.070728e-54)^3-(2.070728e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1\Bigg/\left(\frac{4\times1.962364415\times10^{19}}{5\times0.0864055^2}\times\frac{1}{1.394569\times10^{-27}}\sqrt{-\frac{8.799876\times10^{49}\times4\pi(2.070728\times10^{-54})^3-(2.070728\times10^{-54})^2}{6.67\times10^{-11}}}\right)\right)}$$

Result:

1.618249203738314188466133990871260931282050873179293907582...

1.6182492….

And:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*((11Pi)/(199+7))^2)))*1/(1.394569e-27)* sqrt[[-((((8.799876e+49 * 4*Pi*(2.070728e-54)^3-(2.070728e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{1/\left(\frac{4\times 1.962364415\times 10^{19}}{5\left(\frac{11\pi}{199+7}\right)^2}\times\frac{1}{1.394569\times 10^{-27}}\sqrt{-\frac{8.799876\times 10^{49}\times 4\pi\,(2.070728\times 10^{-54})^3-(2.070728\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)}$$

Result:

3.141805906456086499777048095402389029165681664688965129415...

3.141805906456…..

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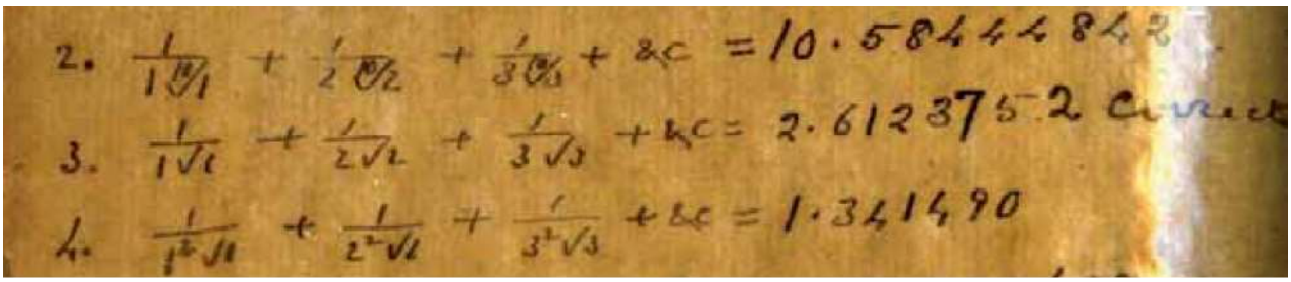


2. $\frac{1}{1\sqrt[10]{1}}+\frac{1}{2\sqrt[10]{2}}+\frac{1}{3\sqrt[10]{3}}+$ &c $=10.58444842$

3. $\frac{1}{1\sqrt{1}}+\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}+$ &c $=2.6123752$ Correct

4. $\frac{1}{1^2\sqrt{1}}+\frac{1}{2^2\sqrt{2}}+\frac{1}{3^2\sqrt{3}}+$ &c $=1.341490$

(((1/(1(1)^(1/10))+1/(2(2)^(1/10))+1/(3(3)^(1/10)))))+…=10.58444842

Input interpretation:

$$\left(\frac{1}{\sqrt[10]{1}}+\frac{1}{2\sqrt[10]{2}}+\frac{1}{3\sqrt[10]{3}}\right)+\cdots=10.58444842$$

Result:

$$\sum_{n=1}^{\infty}\left(1+\frac{1}{2\sqrt[10]{2}}+\frac{1}{3\sqrt[10]{3}}\right)=10.5844$$

10.5844

((1/(1sqrt1)+1/(2sqrt2)+1/(3sqrt3)))+... = 2.6123752

Input interpretation:

$$\left(\frac{1}{\sqrt{1}}+\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}\right)+\cdots=2.6123752$$

Result:

$$\sum_{n=1}^{\infty}\left(1+\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}\right)=2.61238$$

2.61238 (about equal Planck Area)

1/(1^2sqrt1)+1/(2^2sqrt2)+1/(3^2sqrt3)+...

Input interpretation:

$$\frac{1}{1^2\sqrt{1}}+\frac{1}{2^2\sqrt{2}}+\frac{1}{3^2\sqrt{3}}+\cdots$$

Infinite sum:

$$\sum_{n=1}^{\infty}\frac{1}{n^{5/2}}=\zeta\left(\frac{5}{2}\right)$$

$\zeta(s)$ is the Riemann zeta function

Decimal approximation:

1.341487257250917179756769693348612136623037629505986511253...

1.3414872572…

Convergence tests:

The ratio test is inconclusive.

The root test is inconclusive.

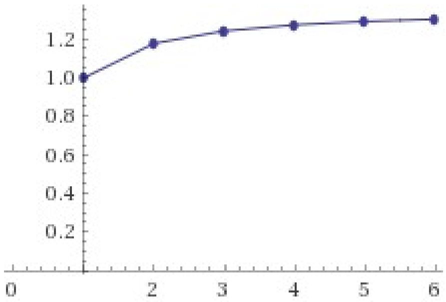
By the comparison test, the series converges.

Partial sum formula:

$$\sum_{n=1}^{m}\frac{1}{n^{5/2}}=H_m^{\left(\frac{5}{2}\right)}$$

$H_n^{(r)}$ is the generalized harmonic number

Partial sums:



Series representations:

$$\zeta\left(\frac{5}{2}\right) = \sum_{k=1}^{\infty} \frac{1}{k^{5/2}}$$

$$\zeta\left(\frac{5}{2}\right) = \frac{4 \sum_{k=1}^{\infty} \frac{(-1)^k}{k^{5/2}}}{-4 + \sqrt{2}}$$

$$\zeta\left(\frac{5}{2}\right) = -\frac{8 \sum_{k=0}^{\infty} \frac{1}{(1+2k)^{5/2}}}{-8 + \sqrt{2}}$$

$$\zeta\left(\frac{5}{2}\right) = e^{\sum_{k=1}^{\infty} P\left(\frac{5k}{2}\right)/k}$$

1/(1^2sqrt1)+1/(2^2sqrt2)+1/(3^2sqrt3) +1/(4^2sqrt4) +1/(5^2sqrt5) +1/(6^2sqrt6)+1/(7^2sqrt7)+1/(8^2sqrt8)+1/(9^2sqrt9)+1/(10^2sqrt10)

Input:

$$\frac{1}{1^2 \sqrt{1}} + \frac{1}{2^2 \sqrt{2}} + \frac{1}{3^2 \sqrt{3}} + \frac{1}{4^2 \sqrt{4}} + \frac{1}{5^2 \sqrt{5}} + \frac{1}{6^2 \sqrt{6}} + \frac{1}{7^2 \sqrt{7}} + \frac{1}{8^2 \sqrt{8}} + \frac{1}{9^2 \sqrt{9}} + \frac{1}{10^2 \sqrt{10}}$$

Result:

$$\frac{8051}{7776} + \frac{33}{128 \sqrt{2}} + \frac{1}{9 \sqrt{3}} + \frac{1}{25 \sqrt{5}} + \frac{1}{36 \sqrt{6}} + \frac{1}{49 \sqrt{7}} + \frac{1}{100 \sqrt{10}}$$

Decimal approximation:

1.321920835716551018567751309087971926680964238192181767849...

1.3219208357…

Alternate forms:

$$\frac{1}{2667168000}\left(2761493000+343814625\sqrt{2}+98784000\sqrt{3}+21337344\sqrt{5}+12348000\sqrt{6}+7776000\sqrt{7}+2667168\sqrt{10}\right)$$

$$\frac{1}{49\sqrt{7}}+\frac{8051000+1002375\sqrt{2}+288000\sqrt{3}+62208\sqrt{5}+36000\sqrt{6}+7776\sqrt{10}}{7776000}$$

$$\frac{33\sqrt{2}}{256}+\frac{\sqrt{3}}{27}+\frac{\sqrt{5}}{125}+\frac{\sqrt{6}}{216}+\frac{\sqrt{7}}{343}+\frac{\sqrt{10}}{1000}+\frac{8051}{7776}$$

We can to calculate also:

(((1/(1(1)^(1/10))+1/(2(2)^(1/10))+1/(3(3)^(1/10)))))+((1/(1sqrt1)+1/(2sqrt2)+1/(3sqrt3)))+(((1/(1^2sqrt1)+1/(2^2sqrt2)+1/(3^2sqrt3))))

Input:

$$\left(\frac{1}{1\sqrt[10]{1}}+\frac{1}{2\sqrt[10]{2}}+\frac{1}{3\sqrt[10]{3}}\right)+\left(\frac{1}{1\sqrt{1}}+\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}\right)+\left(\frac{1}{1^2\sqrt{1}}+\frac{1}{2^2\sqrt{2}}+\frac{1}{3^2\sqrt{3}}\right)$$

Result:

$$3+\frac{3}{4\sqrt{2}}+\frac{1}{2\sqrt[10]{2}}+\frac{4}{9\sqrt{3}}+\frac{1}{3\sqrt[10]{3}}$$

Decimal approximation:

4.552099521245068755915584481957471514940738892243578367035...

4.552099521…

Alternate forms:

$$\frac{1}{216}\left(648+81\sqrt{2}+54\times 2^{9/10}+32\sqrt{3}+24\times 3^{9/10}\right)$$

$$\frac{4}{9\sqrt{3}}+\frac{1}{3\sqrt[10]{3}}+\frac{1}{8}\left(24+3\sqrt{2}+2\times 2^{9/10}\right)$$

$$\frac{3\sqrt{2}}{8}+\frac{2^{9/10}}{4}+\frac{4\sqrt{3}}{27}+\frac{3^{9/10}}{9}+3$$

4*((((((1/(1(1)^(1/10))+1/(2(2)^(1/10))+1/(3(3)^(1/10))))))+((1/(1sqrt1)+1/(2sqrt2)+1/(3sqrt3)))+(((1/(1^2sqrt1)+1/(2^2sqrt2)+1/(3^2sqrt3)))))))^4+11

Input:

$$4\left(\left(\frac{1}{1\sqrt[10]{1}}+\frac{1}{2\sqrt[10]{2}}+\frac{1}{3\sqrt[10]{3}}\right)+\left(\frac{1}{1\sqrt{1}}+\frac{1}{2\sqrt{2}}+\frac{1}{3\sqrt{3}}\right)+\left(\frac{1}{1^2\sqrt{1}}+\frac{1}{2^2\sqrt{2}}+\frac{1}{3^2\sqrt{3}}\right)\right)^4+11$$

Exact result:

$$11+4\left(3+\frac{3}{4\sqrt{2}}+\frac{1}{2\sqrt[10]{2}}+\frac{4}{9\sqrt{3}}+\frac{1}{3\sqrt[10]{3}}\right)^4$$

Decimal approximation:

1728.540492475795279443106679782349021660859345491293082454...

1728.5404924...

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

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1/2 ln(2Pi)

Input:

$$\frac{1}{2}\log(2\pi)$$

$\log(x)$ is the natural logarithm

Decimal approximation:

0.918938533204672741780329736405617639861397473637783412817...

0.9189385332046…

Alternate forms:

$$\frac{1}{2}(\log(2)+\log(\pi))$$

$$\frac{\log(2)}{2}+\frac{\log(\pi)}{2}$$

Alternative representations:

$$\frac{1}{2}\log(2\pi)=\frac{\log_e(2\pi)}{2}$$

$$\frac{1}{2}\log(2\pi)=\frac{1}{2}\log(a)\log_a(2\pi)$$

$$\frac{1}{2}\log(2\pi)=-\frac{1}{2}\operatorname{Li}_1(1-2\pi)$$

Series representations:

$$\frac{1}{2}\log(2\pi)=\frac{1}{2}\log(-1+2\pi)-\frac{1}{2}\sum_{k=1}^{\infty}\frac{\left(\frac{1}{1-2\pi}\right)^k}{k}$$

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

$$\frac{1}{2}\log(2\pi)=i\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+\frac{\log(z_0)}{2}-\frac{1}{2}\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\frac{1}{2}\log(2\pi) = \frac{1}{2}\int_1^{2\pi}\frac{1}{t}\,dt$$

$$\frac{1}{2}\log(2\pi) = -\frac{i}{4\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

((1/2 ln(2Pi)))^1/8

Input:

$$\sqrt[8]{\frac{1}{2}\log(2\pi)}$$

log(x) is the natural logarithm

Decimal approximation:

0.989488629253083908737611692221593277240610962414002716072...

0.989488629253… result practically equal to the dilaton value **0.989117352243 = $\boldsymbol{\phi}$**

Alternate form:

$$\sqrt[8]{\frac{1}{2}(\log(2)+\log(\pi))}$$

All 8th roots of 1/2 log(2 π):

$$e^0\sqrt[8]{\frac{1}{2}\log(2\pi)} \approx 0.98949 \quad \text{(real, principal root)}$$

$$e^{(i\pi)/4}\sqrt[8]{\frac{1}{2}\log(2\pi)} \approx 0.69967+0.69967\,i$$

$$e^{(i\pi)/2}\sqrt[8]{\frac{1}{2}\log(2\pi)} \approx 0.98949\,i$$

$$e^{(3i\pi)/4}\sqrt[8]{\frac{1}{2}\log(2\pi)} \approx -0.6997+0.69967\,i$$

$$e^{i\pi}\sqrt[8]{\frac{1}{2}\log(2\pi)} \approx -0.9895 \quad \text{(real root)}$$

Alternative representations:

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \sqrt[8]{\frac{\log_e(2\pi)}{2}}$$

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \sqrt[8]{\frac{1}{2}\log(a)\log_a(2\pi)}$$

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \sqrt[8]{-\frac{1}{2}\mathrm{Li}_1(1-2\pi)}$$

Series representations:

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \frac{\sqrt[8]{\log(-1+2\pi) - \sum_{k=1}^{\infty}\frac{\left(\frac{1}{1-2\pi}\right)^k}{k}}}{\sqrt[8]{2}}$$

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \frac{\sqrt[8]{2 i \pi \left\lfloor \frac{\arg(2\pi - x)}{2\pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty}\frac{(-1)^k (2\pi - x)^k x^{-k}}{k}}}{\sqrt[8]{2}} \quad \text{for } x < 0$$

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \frac{\sqrt[8]{\log(z_0) + \left\lfloor \frac{\arg(2\pi - z_0)}{2\pi} \right\rfloor \left(\log\left(\frac{1}{z_0}\right) + \log(z_0)\right) - \sum_{k=1}^{\infty}\frac{(-1)^k (2\pi - z_0)^k z_0^{-k}}{k}}}{\sqrt[8]{2}}$$

Integral representations:

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \frac{\sqrt[8]{\int_1^{2\pi}\frac{1}{t}\,dt}}{\sqrt[8]{2}}$$

$$\sqrt[8]{\frac{1}{2}\log(2\pi)} = \frac{\sqrt[8]{-i\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds}}{\sqrt[4]{2}\,\sqrt[8]{\pi}} \quad \text{for } -1 < \gamma < 0$$

16*log base 0.98948862925((1/2 ln(2Pi)))-Pi+1/golden ratio

Input interpretation:

$$16 \log_{0.98948862925}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi}$$

$\log(x)$ is the natural logarithm

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

ϕ is the golden ratio

Result:

125.476441...

125.476441… 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:

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = -\pi + 16 \log_{0.989488629250000}\left(\frac{\log_e(2\pi)}{2}\right) + \frac{1}{\phi}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = -\pi + \frac{1}{\phi} + \frac{16 \log\left(\frac{1}{2}\log(2\pi)\right)}{\log(0.989488629250000)}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = -\pi + 16 \log_{0.989488629250000}\left(\frac{1}{2}\log(a)\log_a(2\pi)\right) + \frac{1}{\phi}$$

Series representations:

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = \frac{1}{\phi} - \pi - \frac{16 \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k (-2+\log(2\pi))^k}{k}}{\log(0.989488629250000)}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = \frac{1}{\phi} - \pi + 16 \log_{0.989488629250000}\left(\frac{1}{2}\left(\log(-1+2\pi) - \sum_{k=1}^{\infty} \frac{(-1)^k (-1+2\pi)^{-k}}{k}\right)\right)$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = \frac{1}{\phi} - \pi + 16 \log_{0.989488629250000}\left(\frac{1}{2}\left(2 i \pi \left\lfloor \frac{\arg(2\pi - x)}{2\pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{(-1)^k (2\pi - x)^k x^{-k}}{k}\right)\right) \text{ for } x < 0$$

Integral representations:

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = \frac{1}{\phi} - \pi + 16 \log_{0.989488629250000}\left(\frac{1}{2}\int_1^{2\pi} \frac{1}{t}\, dt\right)$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) - \pi + \frac{1}{\phi} = \frac{1}{\phi} - \pi + 16 \log_{0.989488629250000}\left(\frac{1}{4 i \pi}\int_{-i\infty+\gamma}^{i\infty+\gamma} \frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\, ds\right) \text{ for } -1 < \gamma < 0$$

16*log base 0.98948862925((1/2 ln(2Pi)))+11+1/golden ratio

Input interpretation:

$$16 \log_{0.98948862925}\left(\frac{1}{2}\log(2\pi)\right) + 11 + \frac{1}{\phi}$$

$\log(x)$ is the natural logarithm

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

ϕ is the golden ratio

Result:

139.618034...

139.618034… result practically equal to the rest mass of Pion meson 139.57 MeV

Alternative representations:

$$16 \log_{0.989488629250000}\left(\frac{1}{2}\log(2\pi)\right) + 11 + \frac{1}{\phi} = 11 + 16 \log_{0.989488629250000}\left(\frac{\log_e(2\pi)}{2}\right) + \frac{1}{\phi}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} + \frac{16 \log\left(\frac{1}{2} \log(2 \pi)\right)}{\log(0.989488629250000)}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + 16 \log_{0.989488629250000}\left(\frac{1}{2} \log(a) \log_a(2 \pi)\right) + \frac{1}{\phi}$$

Series representations:

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} - \frac{16 \sum_{k=1}^{\infty} \frac{\left(-\frac{1}{2}\right)^k (-2+\log(2 \pi))^k}{k}}{\log(0.989488629250000)}$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} + 16 \log_{0.989488629250000}\left(\frac{1}{2}\left(\log(-1 + 2 \pi) - \sum_{k=1}^{\infty} \frac{(-1)^k (-1 + 2 \pi)^{-k}}{k}\right)\right)$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} + 16 \log_{0.989488629250000}\left(\frac{1}{2}\left(2 i \pi \left\lfloor \frac{\arg(2 \pi - x)}{2 \pi} \right\rfloor + \log(x) - \sum_{k=1}^{\infty} \frac{(-1)^k (2 \pi - x)^k x^{-k}}{k}\right)\right) \quad \text{for } x < 0$$

Integral representations:

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} + 16 \log_{0.989488629250000}\left(\frac{1}{2} \int_1^{2 \pi} \frac{1}{t} \, dt\right)$$

$$16 \log_{0.989488629250000}\left(\frac{1}{2} \log(2 \pi)\right) + 11 + \frac{1}{\phi} = 11 + \frac{1}{\phi} + 16 \log_{0.989488629250000}\left(\frac{1}{4 i \pi} \int_{-i \infty+\gamma}^{i \infty+\gamma} \frac{(-1 + 2 \pi)^{-s} \, \Gamma(-s)^2 \, \Gamma(1 + s)}{\Gamma(1 - s)} \, ds\right) \quad \text{for } -1 < \gamma < 0$$

(64*7)((1/2 ln(2Pi)))*golden ratio^3-18+Pi

Input:

$$(64\times 7)\left(\frac{1}{2}\log(2\pi)\right)\phi^3 - 18 + \pi$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Exact result:

$$224\,\phi^3 \log(2\pi) - 18 + \pi$$

Decimal approximation:

1729.0649626755155398782384244243811870843594848180545078 53...

1729.0649626…

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:

$$-18 + \pi + 28\left(1+\sqrt{5}\right)^3 (\log(2) + \log(\pi))$$

$$-18 + \pi + 448\log(2\pi) + 224\sqrt{5}\,\log(2\pi)$$

$$\pi + 2\left(-9 + 224\log(2\pi) + 112\sqrt{5}\,\log(2\pi)\right)$$

Alternative representations:

$$\frac{1}{2}\left(\log(2\pi)\,\phi^3\right) 64\times 7 - 18 + \pi = -18 + \pi + 224\log_e(2\pi)\,\phi^3$$

$$\frac{1}{2}\left(\log(2\pi)\,\phi^3\right) 64\times 7 - 18 + \pi = -18 + \pi + 224\log(a)\log_a(2\pi)\,\phi^3$$

$$\frac{1}{2}\left(\log(2\pi)\,\phi^3\right) 64\times 7 - 18 + \pi = -18 + \pi - 224\,\mathrm{Li}_1(1-2\pi)\,\phi^3$$

Series representations:

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7-18+\pi=-18+\pi+224\phi^3\log(-1+2\pi)-224\phi^3\sum_{k=1}^{\infty}\frac{\left(\frac{1}{1-2\pi}\right)^k}{k}$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7-18+\pi=-18+\pi+448\,i\,\phi^3\pi\left\lfloor\frac{\arg(2\pi-x)}{2\pi}\right\rfloor+224\phi^3\log(x)-224\phi^3\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7-18+\pi=-18+\pi+448\,i\,\phi^3\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+224\phi^3\log(z_0)-224\phi^3\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7-18+\pi=-18+\pi+224\phi^3\int_1^{2\pi}\frac{1}{t}\,dt$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7-18+\pi=-18+\pi-\frac{112\,i\,\phi^3}{\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\quad\text{for } -1<\gamma<0$$

(64*7)((1/2 ln(2Pi)))*golden ratio^3+Pi+29+7

Input:

$$(64\times 7)\left(\frac{1}{2}\log(2\pi)\right)\phi^3+\pi+29+7$$

$\log(x)$ is the natural logarithm

ϕ is the golden ratio

Exact result:

$$224\phi^3\log(2\pi)+36+\pi$$

Decimal approximation:

1783.064962675515539878238424424381187084359484818054507853...

1783.0649626…

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

Alternate forms:

$$36+\pi+28\left(1+\sqrt{5}\right)^3(\log(2)+\log(\pi))$$

$$36+\pi+448\log(2\pi)+224\sqrt{5}\log(2\pi)$$

$$\pi+4\left(9+112\log(2\pi)+56\sqrt{5}\log(2\pi)\right)$$

Alternative representations:

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi+224\log_e(2\pi)\phi^3$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi+224\log(a)\log_a(2\pi)\phi^3$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi-224\operatorname{Li}_1(1-2\pi)\phi^3$$

Series representations:

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi+224\phi^3\log(-1+2\pi)-224\phi^3\sum_{k=1}^{\infty}\frac{\left(\frac{1}{1-2\pi}\right)^k}{k}$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi+448\,i\,\phi^3\pi\left\lfloor\frac{\arg(2\pi-x)}{2\pi}\right\rfloor+224\phi^3\log(x)-224\phi^3\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{1}{2}\left(\log(2\pi)\phi^3\right)64\times 7+\pi+29+7=36+\pi+448\,i\,\phi^3\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+224\phi^3\log(z_0)-224\phi^3\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-z_0)^k z_0^{-k}}{k}$$

Integral representations:

$$\frac{1}{2}\left(\log(2\pi)\,\phi^3\right) 64\times 7+\pi+29+7 = 36+\pi+224\,\phi^3\int_1^{2\pi}\frac{1}{t}\,dt$$

$$\frac{1}{2}\left(\log(2\pi)\,\phi^3\right) 64\times 7+\pi+29+7 = 36+\pi-\frac{112\,i\,\phi^3}{\pi}\int_{-i\,\infty+\gamma}^{i\,\infty+\gamma}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

1/10^52(((((1/2 ln(2Pi)))+18/10^2+7/10^3-3/10^4)))

Input:

$$\frac{1}{10^{52}}\left(\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}\right)$$

log(x) is the natural logarithm

Exact result:

$$\frac{\frac{1867}{10000}+\frac{1}{2}\log(2\pi)}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Decimal approximation:

$1.1056385332046727417803297364056176398613974736377834\ldots\times 10^{-52}$

$1.105638533\ldots*10^{-52}$ result practically equal to the value of Cosmological Constant $1.1056*10^{-52}$ m^{-2}

Alternate forms:

$$\frac{1867+5000\log(2\pi)}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\log(2\pi)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\frac{\frac{1867}{10000}+\frac{1}{2}(\log(2)+\log(\pi))}{10\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Alternative representations:

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=\frac{\frac{\log_e(2\pi)}{2}+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}$$

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=\frac{\frac{1}{2}\log(a)\log_a(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}$$

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=\frac{-\frac{1}{2}\operatorname{Li}_1(1-2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}$$

Series representations:

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=$$

$$\frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\log(-1+2\pi)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}-\frac{\sum_{k=1}^{\infty}\frac{\left(\frac{1}{1-2\pi}\right)^k}{k}}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=$$

$$\frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\left\lfloor\frac{\arg(2\pi-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\log(z_0)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\left\lfloor\frac{\arg(2\pi-z_0)}{2\pi}\right\rfloor\log(z_0)}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}-\frac{\sum_{k=1}^{\infty}\frac{(-1)^k(2\pi-z_0)^k z_0^{-k}}{k}}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}}=$$

$$\frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\operatorname{Res}_{s=0}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)\,\Gamma(1+s)}{s}}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}+\frac{\sum_{j=1}^{\infty}\operatorname{Res}_{s=j}\frac{(-1+2\pi)^{-s}\,\Gamma(-s)\,\Gamma(1+s)}{s}}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000}$$

Integral representations:

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}} = \frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} + \frac{1}{20\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} \int_1^{2\pi} \frac{1}{t}\,dt$$

$$\frac{\frac{1}{2}\log(2\pi)+\frac{18}{10^2}+\frac{7}{10^3}-\frac{3}{10^4}}{10^{52}} = \frac{1867}{100\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000} - \frac{i}{40\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,000\,\pi} \int_{-i\infty+\gamma}^{i\infty+\gamma} \frac{(-1+2\pi)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds \quad \text{for } -1<\gamma<0$$

From the value of Cosmological Constant Λ that can be considered linked to the Dark Energy, we perform the following new calculation. From the Einstein equation

$E = mc^2$ we consider the value of Λ = energy, thence we obtain:

1.10563853320467274178 × 10^-52 / 9*10^16

Input interpretation:

$$\frac{1.10563853320467274178\times10^{-52}}{9\times10^{16}}$$

Result:

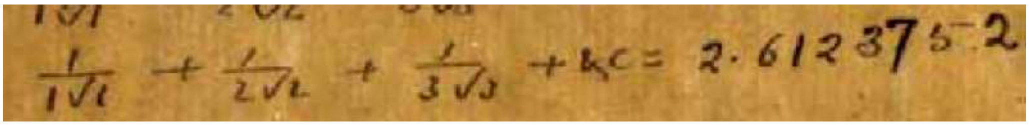
$1.228487259116303046422222222222222222222222222222222\ldots\times10^{-69}$

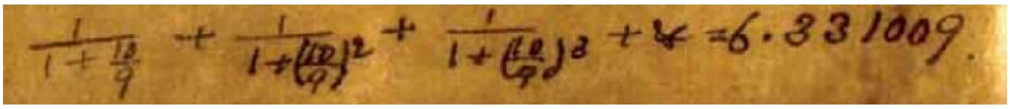
$1.228487259116303046 42\ldots*10^{-69}$

We have that:

(1.10563853320467274178 × 10^-52 / 9*10^16) * 2.6123752e+70 * 6.331009

Where 2.6123752e+70 and 6.331009 are respectively the Planck area and the Planck momentum obtained from the following two Ramanujan expressions:





Input interpretation:

$$\frac{1.10563853320467274178\times 10^{-52}}{9\times 10^{16}}\times 2.6123752\times 10^{70}\times 6.331009$$

Result:

203.17915032710861769649372136687448888888888888888888888888...

203.179150327...

Now, from the formula of Coefficients of the '5th order' mock theta function $\psi_1(q)$, adding the square of the golden ratio, we obtain:

sqrt(golden ratio) * exp(Pi*sqrt(110/15)) / (2*5^(1/4)*sqrt(110))+golden ratio^2

Input:

$$\sqrt{\phi}\times\frac{\exp\left(\pi\sqrt{\frac{110}{15}}\right)}{2\sqrt[4]{5}\sqrt{110}}+\phi^2$$

ϕ is the golden ratio

Exact result:

$$\frac{e^{\sqrt{22/3}\,\pi}\sqrt{\frac{\phi}{22}}}{2\times 5^{3/4}}+\phi^2$$

Decimal approximation:

203.4226135479069615779272039359980621708749898980454152305...

203.42261354...

Property:

$$\frac{e^{\sqrt{22/3}\,\pi}\sqrt{\frac{\phi}{22}}}{2\times 5^{3/4}}+\phi^2 \text{ is a transcendental number}$$

Alternate forms:

$$\frac{1}{2}\left(3+\sqrt{5}\right)+\frac{1}{20}\sqrt{\frac{1}{11}\left(5+\sqrt{5}\right)}\,e^{\sqrt{22/3}\,\pi}$$

$$\frac{1}{220}\left(330+110\sqrt{5}+\sqrt[4]{5}\sqrt{11\left(1+\sqrt{5}\right)}\,e^{\sqrt{22/3}\,\pi}\right)$$

$$\frac{\sqrt{\frac{\phi}{22}}\left(2\times 5^{3/4}\sqrt{22}\,\phi^{3/2}+e^{\sqrt{22/3}\,\pi}\right)}{2\times 5^{3/4}}$$

Series representations:

$$\frac{\sqrt{\phi}\exp\left(\pi\sqrt{\frac{110}{15}}\right)}{2\sqrt[4]{5}\sqrt{110}}+\phi^2=\left(10\phi^2\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(110-z_0)^k z_0^{-k}}{k!}+5^{3/4}\exp\left(\pi\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(\frac{22}{3}-z_0\right)^k z_0^{-k}}{k!}\right)\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(\phi-z_0)^k z_0^{-k}}{k!}\right)\Bigg/\left(10\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(110-z_0)^k z_0^{-k}}{k!}\right) \text{ for not } ((z_0\in\mathbb{R} \text{ and } -\infty<z_0\leq 0))$$

$$\frac{\sqrt{\phi}\exp\left(\pi\sqrt{\frac{110}{15}}\right)}{2\sqrt[4]{5}\sqrt{110}}+\phi^2=\left(10\,\phi^2\exp\left(i\,\pi\left\lfloor\frac{\arg(110-x)}{2\,\pi}\right\rfloor\right)\sum_{k=0}^{\infty}\frac{(-1)^k\,(110-x)^k\,x^{-k}\left(-\frac{1}{2}\right)_k}{k!}+5^{3/4}\exp\left(i\,\pi\left\lfloor\frac{\arg(\phi-x)}{2\,\pi}\right\rfloor\right)\exp\left(\pi\exp\left(i\,\pi\left\lfloor\frac{\arg\left(\frac{22}{3}-x\right)}{2\,\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k\left(\frac{22}{3}-x\right)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}\frac{(-1)^k\,(\phi-x)^k\,x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\Big/\left(10\exp\left(i\,\pi\left\lfloor\frac{\arg(110-x)}{2\,\pi}\right\rfloor\right)\sum_{k=0}^{\infty}\frac{(-1)^k\,(110-x)^k\,x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$

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

$$\frac{\sqrt{\phi}\exp\left(\pi\sqrt{\frac{110}{15}}\right)}{2\sqrt[4]{5}\sqrt{110}}+\phi^2=\left(\left(\frac{1}{z_0}\right)^{-1/2\lfloor\arg(110-z_0)/(2\pi)\rfloor}z_0^{-1/2\lfloor\arg(110-z_0)/(2\pi)\rfloor}\left(10\,\phi^2\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(110-z_0)/(2\pi)\rfloor}z_0^{1/2\lfloor\arg(110-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(110-z_0)^k z_0^{-k}}{k!}+5^{3/4}\exp\left(\pi\left(\frac{1}{z_0}\right)^{1/2\left\lfloor\arg\left(\frac{22}{3}-z_0\right)/(2\pi)\right\rfloor}z_0^{1/2\left(1+\left\lfloor\arg\left(\frac{22}{3}-z_0\right)/(2\pi)\right\rfloor\right)}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k\left(\frac{22}{3}-z_0\right)^k z_0^{-k}}{k!}\right)\left(\frac{1}{z_0}\right)^{1/2\lfloor\arg(\phi-z_0)/(2\pi)\rfloor}z_0^{1/2\lfloor\arg(\phi-z_0)/(2\pi)\rfloor}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(\phi-z_0)^k z_0^{-k}}{k!}\right)\right)\Big/\left(10\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(110-z_0)^k z_0^{-k}}{k!}\right)$$

We note that, with the measures, after some calculations, we obtain:

Result:

203.1792 kg s/m (kilogram seconds per meter)

203.1792 Kg s/m

Inserting the mass in kg in the Hawking radiation calculator, considering this mass as a quantum black hole, we obtain:

Mass = 203.1792

Radius = 3.016909e-25

Temperature = 6.040004e+20

From the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/(((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(203.1792)* sqrt[[-((((6.040004e+20 * 4*Pi*(3.016909e-25)^3-(3.016909e-25)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\frac{1}{\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times\frac{1}{203.1792}\sqrt{-\frac{6.040004\times 10^{20}\times 4\pi\left(3.016909\times 10^{-25}\right)^3-\left(3.016909\times 10^{-25}\right)^2}{6.67\times 10^{-11}}}}}$$

Result:

1.618249360560957963462419751385261137337036408185774860860...

1.61824936056095…..

We have also:

(1.105638533204672741 78 × 10^-52 / 9*10^16) *1/(2.6123752 * 6.331009)^-59

Input interpretation:

$$\frac{1.10563853320467274178\times 10^{-52}}{9\times 10^{16}}\times\frac{1}{\frac{1}{(2.6123752\times 6.331009)^{59}}}$$

Result:

958.0124688937313321811071525838001425727656747213008038039...

958.012468.... result very near to the rest mass of Eta prime meson 957.78

We have that:

Input interpretation:

convert 958.0124688937 MeV/c^2 to kilograms

Result:

$1.707812348742 \times 10^{-27}$ kg (kilograms)

$1.707812348742*10^{-27}$ kg

Thence, from the Ramanujan-Nardelli mock formula, we obtain:

sqrt[[[[1/((((((((4*1.962364415e+19)/(5*0.0864055^2)))*1/(1.707812e-27)* sqrt[[-((((7.185820e+49 * 4*Pi*(2.535848e-54)^3-(2.535848e-54)^2))))) / ((6.67*10^-11))]]]]]

Input interpretation:

$$\sqrt{\left(1\left/\left(\frac{4\times 1.962364415\times 10^{19}}{5\times 0.0864055^2}\times\frac{1}{1.707812\times 10^{-27}}\sqrt{-\frac{7.185820\times 10^{49}\times 4\pi\,(2.535848\times 10^{-54})^3-(2.535848\times 10^{-54})^2}{6.67\times 10^{-11}}}\right)\right.\right)}$$

Result:

1.618249001732489443149459218088278231763867264483179467232...

1.618249001732…

Ramanujan mathematics applied to Physics

From:

Force-free electrodynamics near rotation axis of a Kerr black hole
Gianluca Grignani, Troels Harmark and Marta Orselli - arXiv:1908.07227v2 [gr-qc] 4 Nov 2019

We have that:

For generic choices of $\psi_1(r)$, ω_n, i_n, r_0 and α

Υ is an undetermined constant

Here α is proportional to the angular momentum and is in the range $0 \leq \alpha \leq 1$. The Kerr black hole is stationary and axisymmetric.

For:

Input interpretation:

5.9×10^{-4} pc (parsecs)

Unit conversions:

0.001924 ly (light years)

121.7 au (astronomical units)

1.821×10^{10} km (kilometers)

r_0 = 1.821e+10

r = 1.63161e+20

$$\alpha = J/(GM^2)$$

0.90 / (6.674e-11 * (13.12806e+39)^2)

Input interpretation:

$$\frac{0.9}{6.674 \times 10^{-11} \, (13.12806 \times 10^{39})^2}$$

Result:

$7.824474891576339730851028230042387924815761798398 6097... \times 10^{-71}$

$7.8244748915... * 10^{-71}$

and

α = 7.82447489e-71; r_0 = 1.821e+10; r = 1.63161e+20; $\omega_0 = 5$, $\omega_1 = 8$, $\omega_2 = 13$, $i_3 = 21$ and $\gamma = 34$,

From:

$$f_2(r) = -\frac{3}{4\omega_0^3}(2i_3 + \omega_1 - 4\omega_2) + \frac{\alpha^2}{4} + \frac{9}{8}\Upsilon + \frac{3}{4}\Upsilon^2 + \omega_0\left(-\frac{165}{112}\alpha + \frac{39}{28}\alpha\Upsilon\right) + \frac{837}{392}\alpha^2\omega_0^2 + \alpha\omega_0\left(\frac{27}{14} + \frac{18}{7}\Upsilon + \frac{117}{49}\alpha\omega_0\right)\log\frac{r}{r_0} + \frac{108}{49}\alpha^2\omega_0^2\left(\log\frac{r}{r_0}\right)^2 . \quad (43)$$

we obtain:

-3/(4*5^3) * (2*21+8-4*13) + 1/4(7.82447489e-71)^2 + 9/8(34) + 3/4(34)^2 + 5(-165/112 * 7.82447489e-71 + 39/28 * 7.82447489e-71 * 34) + 837/392 * (7.82447489e-71)^2 * 5^2

Input interpretation:

$$-\frac{3}{4\times 5^3}(2\times 21 + 8 - 4\times 13) + \frac{1}{4}(7.82447489\times 10^{-71})^2 + \frac{9}{8}\times 34 + \frac{3}{4}\times 34^2 + 5\left(-\frac{165}{112}\times 7.82447489\times 10^{-71} + \frac{39}{28}\times 7.82447489\times 10^{-71}\times 34\right) + \frac{837}{392}(7.82447489\times 10^{-71})^2\times 5^2$$

Result:

905.26200000000000000000000000000000000000000000000000...

905.262…

7.82447489e-71 * 5 * (27/14+18/7 * 34 + 117/49 * 7.82447489e-71 * 5) ln((1.63161e+20)/(1.821e+10)) + 108/49 * (7.82447489e-71)^2 * 5^2 * ((ln((1.63161e+20)/(1.821e+10))))^2

Input interpretation:

$$7.82447489\times 10^{-71}\times 5\left(\frac{27}{14}+\frac{18}{7}\times 34+\frac{117}{49}\times 7.82447489\times 10^{-71}\times 5\right) \log\left(\frac{1.63161\times 10^{20}}{1.821\times 10^{10}}\right)+\frac{108}{49}\left(7.82447489\times 10^{-71}\right)^2\times 5^2\log^2\left(\frac{1.63161\times 10^{20}}{1.821\times 10^{10}}\right)$$

log(x) is the natural logarithm

Result:

$8.011132...\times 10^{-67}$

$8.011132...*10^{-67}$

((((-3/(4*5^3) * (2*21+8-4*13) + 1/4(7.82447489e-71)^2 + 9/8(34) + 3/4(34)^2 + 5(-165/112 * 7.82447489e-71 + 39/28 * 7.82447489e-71 * 34) + 837/392 * (7.82447489e-71)^2 * 5^2))))+ 8.011132 × 10^-67

Input interpretation:

$$\left(-\frac{3}{4\times 5^3}(2\times 21+8-4\times 13)+\frac{1}{4}\left(7.82447489\times 10^{-71}\right)^2+\frac{9}{8}\times 34+\frac{3}{4}\times 34^2+5\left(-\frac{165}{112}\times 7.82447489\times 10^{-71}+\frac{39}{28}\times 7.82447489\times 10^{-71}\times 34\right)+\frac{837}{392}\left(7.82447489\times 10^{-71}\right)^2\times 5^2\right)+8.011132\times 10^{-67}$$

Result:

905.2620000000000000000000000000000000000000000000000...

905.262…

Adding 34, that is a Fibonacci number, we obtain:

34+((((-3/(4*5^3) * (2*21+8-4*13) + 1/4(7.82447489e-71)^2 + 9/8(34) + 3/4(34)^2 + 5(-165/112 * 7.82447489e-71 + 39/28 * 7.82447489e-71 * 34) + 837/392 * (7.82447489e-71)^2 * 5^2))))+ 8.011132 × 10^-67

Input interpretation:

$$34+\left(-\frac{3}{4\times5^3}(2\times21+8-4\times13)+\frac{1}{4}(7.82447489\times10^{-71})^2+\frac{9}{8}\times34+\frac{3}{4}\times34^2+5\left(-\frac{165}{112}\times7.82447489\times10^{-71}+\frac{39}{28}\times7.82447489\times10^{-71}\times34\right)+\frac{837}{392}(7.82447489\times10^{-71})^2\times5^2\right)+8.011132\times10^{-67}$$

Result:

939.262000000000000000000000000000000000000000000000000...

939.262….. result practically equal to the rest mass of Neutron 939.565379 MeV

Now, we have that:

$$\theta^2(n+1)\left(\frac{6}{7}\alpha\omega_0\frac{r_0}{r}\log\frac{r}{r_0}\right)^n$$

for all $n \geq 1$.

$\theta = 1/12$

we obtain:

(1/12)^2 * (1+1)*((((6/7*7.82447489e-71 * 5 *((1.821e+10)/(1.63161e+20)) ln((1.63161e+20)/(1.821e+10)))

Input interpretation:

$$\left(\frac{1}{12}\right)^2(1+1)\left(\frac{6}{7}\times7.82447489\times10^{-71}\times5\times\frac{1.821\times10^{10}}{1.63161\times10^{20}}\log\left(\frac{1.63161\times10^{20}}{1.821\times10^{10}}\right)\right)$$

log(x) is the natural logarithm

Result:

$1.19118\ldots\times10^{-80}$

$1.19118\ldots*10^{-80}$

We know that:

$$\alpha = J/(GM^2)$$

$$\frac{0.9}{6.674 \times 10^{-11} (13.12806 \times 10^{39})^2}$$

$7.8244748915763397308510282300423879248157617983986097... \times 10^{-71}$

$7.8244748915...*10^{-71}$

and $r_0 = 1.821e+10$

Now, we have that:

1/10^27(((((((((((((1.821e+10 * 1/7.8244748915e-71 * [(1/12)^2 * (1+1)*((((6/7*7.82447489e-71 * 5 *((1.821e+10)/(1.63161e+20)) ln((1.63161e+20)/(1.821e+10))))))]))))))^1/2 + 7/10^3)))))))

Input interpretation:

$$\frac{1}{10^{27}}\left(\sqrt{\left(1.821 \times 10^{10} \times \frac{1}{7.8244748915 \times 10^{-71}}\left(\left(\frac{1}{12}\right)^2 (1+1)\left(\frac{6}{7} \times 7.82447489 \times 10^{-71} \times 5 \times \frac{1.821 \times 10^{10}}{1.63161 \times 10^{20}} \log\left(\frac{1.63161 \times 10^{20}}{1.821 \times 10^{10}}\right)\right)\right)\right)} + \frac{7}{10^3}\right)$$

log(x) is the natural logarithm

Result:

$1.6720099737536994425065337723316150604342393680263729... \times 10^{-27}$

$1.67200997375...*10^{-27}$ result practically equal to the proton mass in kg

Observations

The reason why inserting any mass, temperature and radius of a black hole, from the quantum to the supermassive one, is ALWAYS the golden ratio as a result, would seem to lie in the intrinsic spiral rotation in the black holes. The novelty in the calculations carried out in this paper is that with the same formula (Ramanujan-Nardelli mock formula), we obtain always by entering the above parameters, the value of π. Note that in this formula there are numbers belonging to the succession of Lucas and / or to that of Fibonacci, both linked to ϕ. These constants are connected to black holes: π and "e" are related to the geometry of these celestial bodies, Planck's length to their quantum nature and the Cosmological Constant is connected to dark energy which, according to some studies, it would also be related to black holes. Finally, we remember that black holes are the central and fundamental part in the formation and evolution of a galaxy. The galaxies themselves are connected to π and ϕ, being of elliptical or spiral form (logarithmic-golden spiral) and also in the black holes in the center of them, as can be seen from the figure, the trace of the two fundamental physical-mathematical constants π and ϕ, is evident.

Finally, it should be highlighted how all Ramanujan's expressions are developed using ALWAYS numbers belonging to the Lucas and / or Fibonacci sequences connected strictly to the golden ratio, in addition to π and the golden ratio itself.

https://www.cambridgesciencefestival.org/event/photographing-black-holes-first-results-from-the-event-horizon-telescope/

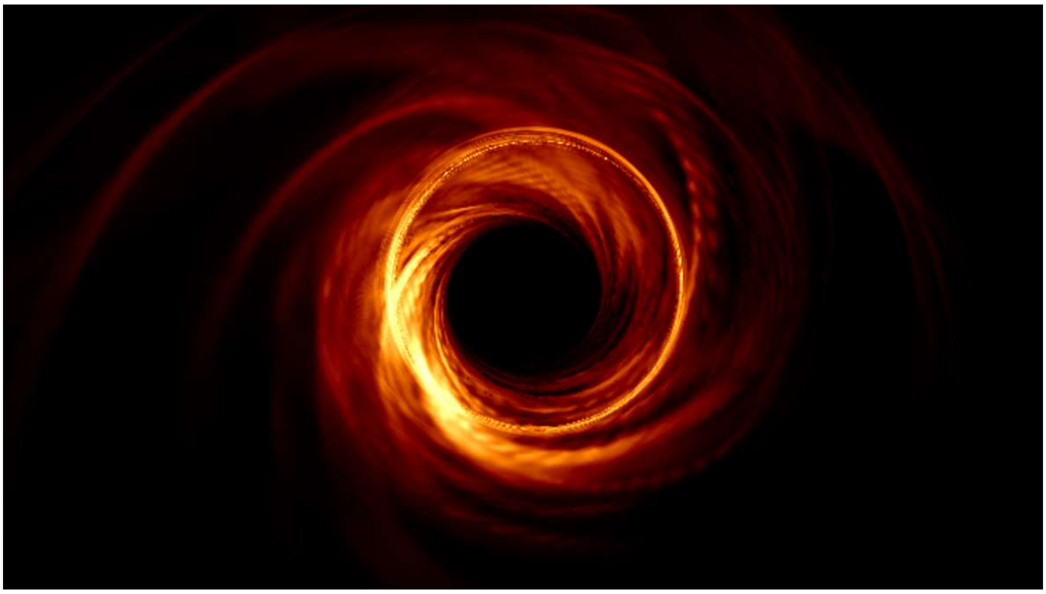


Fig. Black Hole (SMBH87)

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References

Manuscript Book 2 of Srinivasa Ramanujan