Sum[1/n^4,{n,1,Infinity}]

Infinite sum:

$$\sum_{n=1}^{\infty} \frac{1}{n^4} = \frac{\pi^4}{90}$$

Decimal approximation:

More digits

1.082323233711138191516003696541167902774750951918726907682…

Convergence tests:

The ratio test is inconclusive.

The root test is inconclusive.

By the comparison test, the series converges.

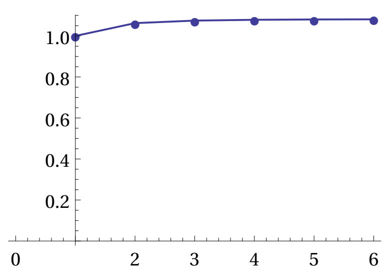
Partial sum formula:

$$\sum_{n=1}^{m} \frac{1}{n^4} = H_m^{(4)}$$

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

Partial sums:

More terms Show points



Series representations:

More

$$\frac{\pi^4}{90} = \sum_{k=1}^{\infty} \frac{1}{k^4}$$

$$\frac{\pi^4}{90} = \frac{16}{15} \sum_{k=0}^{\infty} \frac{1}{(1+2k)^4}$$

$$\frac{\pi^4}{90} = \frac{128}{45} \left(\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k} \right)^4$$

$$\frac{\pi^4}{90} = \frac{128}{45} \left(\sum_{k=0}^{\infty} \frac{(-1)^k \, 1195^{-1-2k} \left(5^{1+2k} - 4 \times 239^{1+2k}\right)}{1+2k} \right)^4$$

More information »