

FORMULAS

'The laws of nature are but the mathematical thoughts of God.'
Euclid

FORMULA No.

W31

www.and-just-math.com

We are not mathematicians, but we love mathematics and create formulas ourselves.

'No other science boosts the faith in the strength of the human spirit like mathematics.' Hugo Steinhaus

1 WEEK = 7 DAYS 7 FORMULAS



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FORMULA No.

D311

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k^6 + 2 \times k^5 + k^4 + 4 \times k^3 + 6 \times k^2 + 4 \times k + 1}{k^4 \times (k+1)^4} = \frac{\pi^2}{6}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{\left(8 \times k^5 + 28 \times k^4 + 66 \times k^3 + 89 \times k^2 + 55 \times k + 12\right) \times (2 \times k)!}{(k+1)^2 \times (2 \times k - 1) \times (2 \times k + 1)^2 \times (2 \times k + 3) \times k!^2 \times 2^{4 \times k + 2}} = \frac{\pi - 3}{3}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{4 \times k^6 + 20 \times k^5 + 29 \times k^4 + 66 \times k^3 + 125 \times k^2 + 84 \times k + 16}{(k+1)^2 \times (k+2)^2 \times (2 \times k - 1)^2 \times (2 \times k + 1)^2} = \frac{\pi^2}{8}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{9 \times k^4 + 75 \times k^3 + 352 \times k^2 + 956 \times k + 1024}{(k+2)^2 \times (k+3)^2 \times (k+4)^2 \times (3 \times k + 5) \times (3 \times k + 8)} = \frac{6 \times \pi^2 - 59}{18}$$



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$$\sum_{k=1}^{k=\infty} \frac{1}{4 \times (2 \times k - 1)^2 - 1225} = -\frac{\pi}{280}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{9 \times k^4 + 57 \times k^3 + 175 \times k^2 + 309 \times k + 225}{(3 \times k + 2) \times (3 \times k + 5) \times (k + 2)^2 \times (k + 3)^2} = \frac{2 \times \pi^2 - 15}{12}$$



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$$\sum_{k=1}^{k=\infty} \frac{1}{4 \times (2 \times k - 1)^2 - 3481} = -\frac{\pi}{472}$$

