

# **FORMULAS**

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

FORMULA No.

**W39** 

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.

**D391** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k^5 + 7 \times k^4 + 25 \times k^3 + 68 \times k^2 + 112 \times k + 64}{k \times (k+1) \times (k+2)^3 \times (k+3)^3 \times (k+4)^3} = \frac{533 - 54 \times \pi^2}{54}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{2 \times k^4 + 18 \times k^3 + 63 \times k^2 + 99 \times k + 58}{(k+1)^2 \times (k+2)^3 \times (k+3)} = \frac{4 \times \pi^2 - 23}{12}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{256 \times k^4 + 640 \times k^3 + 1600 \times k^2 + 1464 \times k + 243}{(4 \times k + 5) \times (4 \times k + 9) \times (16 \times k^2 - 9) \times (16 \times k^2 - 1)} = \frac{\pi}{8}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k^4 + 13 \times k^3 + 85 \times k^2 + 296 \times k + 400}{(k+2)^2 \times (k+3)^2 \times (k+4)^3 \times (k+5)} = \frac{6 \times \pi^2 - 59}{18}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{4 \times k^6 + 4 \times k^5 - 3 \times k^4 + 14 \times k^3 + 13 \times k^2 + 6 \times k + 1}{k^2 \times (k+1)^2 \times (2 \times k - 1)^2 \times (2 \times k + 1)^2} = \frac{\pi^2}{8}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{49 \times k^4 + 259 \times k^3 + 624 \times k^2 + 916 \times k + 576}{(7 \times k + 1) \times (7 \times k + 8) \times (k + 2)^2 \times (k + 3)^2} = \frac{2 \times \pi^2 - 15}{12}$$



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$$\sum_{k=1}^{k=\infty} \frac{1}{4 \times (2 \times k - 1)^2 - 2601} = -\frac{\pi}{408}$$

