

# **FORMULAS**

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

FORMULA No.

**W20** 

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.

**D201** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{16 \times k^4 + 144 \times k^3 + 504 \times k^2 + 524 \times k + 121}{(2 \times k + 9) \times (2 \times k + 11) \times (4 \times k^2 - 1)^2} = \frac{\pi^2}{8}$$



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**D202** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{16 \times k^4 + 120 \times k^3 + 429 \times k^2 + 912 \times k + 784}{(k+2) \times (k+3)^2 \times (k+4)^2 \times (4 \times k + 3) \times (4 \times k + 7)} = \frac{61 - 6 \times \pi^2}{36}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k^6 + 14 \times k^5 + 73 \times k^4 + 232 \times k^3 + 528 \times k^2 + 640 \times k + 256}{k^2 \times (k+1)^2 \times (k+3)^2 \times (k+4)^2} = \frac{\pi^2}{6}$$



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**D204** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{(36 \times k^5 + 156 \times k^4 + 421 \times k^3 + 602 \times k^2 + 397 \times k + 96) \times (2 \times k)!}{(k+1)^2 \times (2 \times k + 1) \times (2 \times k + 3) \times (3 \times k - 1) \times (3 \times k + 2) \times k!^2 \times 2^{4 \times k + 3}} = \frac{\pi - 3}{3}$$



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**D205** 

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$$\sum_{k=1}^{k=\infty} \frac{1}{16 \times k^2 - 529} = \frac{23 \times \pi + 4}{4232}$$



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**D206** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{144 \times k^4 + 192 \times k^3 + 571 \times k^2 + 463 \times k + 75}{(3 \times k + 2) \times (3 \times k + 5) \times (16 \times k^2 - 9) \times (16 \times k^2 - 1)} = \frac{\pi}{8}$$





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FORMULA No.

**D207** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{16 \times k^4 + 96 \times k^3 + 307 \times k^2 + 553 \times k + 396}{(k+1) \times (k+2) \times (4 \times k + 5) \times (4 \times k + 7) \times (4 \times k + 9) \times (4 \times k + 11)} = \frac{105 \times \pi - 304}{840}$$

