

# **FORMULAS**

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

FORMULA No.

**W06** 

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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$$\sum_{k=\infty}^{k=\infty} \sin\left(\frac{3\times\pi}{7^k}\right) \times \sin\left(\frac{9\times\pi}{4\times7^k}\right) = \frac{2+\sqrt{2}}{4}$$





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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{2 \times k + 1}{\left(5 - \sqrt{21}\right) \times k^4 + 2 \times \left(5 - \sqrt{21}\right) \times k^3 + \left(\sqrt{21} - 1\right) \times k^2 + 2 \times \left(\sqrt{21} - 3\right) \times k + 3 + \sqrt{21}} = \frac{1}{2}$$



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$$\sum_{k=1}^{k=\infty} \frac{k^2 + 11 \times k + 31}{(k+5) \times (k+6) \times (k+6)!} = \frac{1}{4320}$$



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**D064** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{11^{k-1} \times \left[ (11 \times k + 18)^{k+1} + 121 \times (11 \times k - 4)^{k-1} - 22 \times (11 \times k + 7)^k \right]}{\left[ (11 \times k + 18)^{k+1} - 11 \times (11 \times k + 7)^k \right] \times \left[ (11 \times k + 7)^k - 11 \times (11 \times k - 4)^{k-1} \right]} = \frac{1}{7}$$



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$$k \in N$$

$$\prod_{k=1}^{k=\infty} \left(2 \times cos\left(\frac{5 \times \pi}{4 \times 3^{k+1}}\right) - 1\right)$$

$$= \frac{\left(\sqrt{2} + 2 \times \sqrt{3} + \sqrt{6} + 4\right) \times \sqrt{8 + 2 \times \sqrt{6} - 4 \times \sqrt{2} - 4 \times \sqrt{3}}}{8}$$



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$$\sum_{k=1}^{k=\infty} \frac{1}{(2 \times k + 17) \times (2 \times k + 19)} = \frac{1}{38}$$



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

