# **FORMULAS**

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

FORMULA No.

**W07** 

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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$$k \in N$$

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



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$$k \in N$$

$$\sum_{k=\infty}^{k=\infty} sin\left(\frac{5\times\pi}{2^{k+2}}\right) \times sin\left(\frac{5\times\pi}{3\times2^{k+2}}\right) = \frac{2+\sqrt{3}}{4}$$



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

$$= \frac{\pi \times \left( \sqrt{2} + \sqrt{3} + \sqrt{6} + 2 \right)}{24}$$



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$$\sum_{k=1}^{k=\infty} \frac{k^2 + 9 \times k + 21}{(k+4) \times (k+5) \times (k+5)!} = \frac{1}{600}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{7^{k-1} \times \left[ (7 \times k + 18)^{k+1} + 49 \times (7 \times k + 4)^{k-1} - 14 \times (7 \times k + 11)^k \right]}{\left[ (7 \times k + 18)^{k+1} - 7 \times (7 \times k + 11)^k \right] \times \left[ (7 \times k + 11)^k - 7 \times (7 \times k + 4)^{k-1} \right]} = \frac{1}{11}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k^2 - k - 1}{(7 \times k + 4) \times (7 \times k + 11) \times (11 \times k - 4) \times (11 \times k + 7)} = 0$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{12 \times k^2 - 10 \times k - 1}{(4 \times k - 3) \times (4 \times k + 1) \times (8 \times k - 7) \times (8 \times k + 1)} = \frac{1}{32}$$

