

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

FORMULA No.

**W40** 

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.

**D401** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} arc \ tg\left(\frac{(k+1)\times(k+1)!}{[(k+1)!-1]\times[(k+2)!-1]+1}\right) = \frac{\pi}{4}$$



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FORMULA No.

**D402** 

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$$k \in N$$

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



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**D403** 

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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{k \times \sqrt{9 \times k^2 + 18 \times k + 10} - (k+1) \times \sqrt{9 \times k^2 + 1} + 1}{k \times (k+1)} = 4 - \sqrt{10}$$



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$$\sum_{k=1}^{k=\infty} \sin\left(\frac{\pi}{5^k}\right) \times \sin\left(\frac{2 \times \pi}{3 \times 5^k}\right) = \frac{1}{4}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} \frac{1}{2^k} \times tg\left(\frac{\pi}{3 \times 2^{k+2}}\right) = \frac{12 - \left(2 + \sqrt{3}\right) \times \pi}{\pi}$$



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$$\sum_{k=1}^{k=\infty} arc \ tg\left(\frac{\left(2+\sqrt{3}\right)\times 2^{k-1}}{\left(2^{k-1}-1\right)\times \left(2^{k}-1\right)\times \left(7+4\times \sqrt{3}\right)+2^{2\times k-1}}\right) = \frac{5\times \pi}{12}$$



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**D407** 

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$$\sum_{k=1}^{k=\infty} (-1)^{k-1} \times sin\left(\frac{5 \times \pi}{4 \times 3^{k+1}}\right) \times cos\left(\frac{5 \times \pi}{8 \times 3^{k+1}}\right) =$$

$$= \frac{\left(3 \times \sqrt{2} + \sqrt{6} + 2\right) \times \sqrt{8 + 2 \times \sqrt{6} - 4 \times \sqrt{2} - 4 \times \sqrt{3}}}{16}$$

