

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

FORMULA No.

**W32** 

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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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Euclid

FORMULA No.

**D321** 

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$$\sum_{k=1}^{k=\infty} tg\left(\frac{\pi}{2\times 3^{k+1}}\right) \times \left[1 + tg\left(\frac{\pi}{4\times 3^{k}}\right) \times tg\left(\frac{\pi}{4\times 3^{k+1}}\right)\right]$$

$$= 2 - \sqrt{3}$$



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



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FORMULA No.

**D323** 

 $k \in N$ 

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$$\sum_{k=\infty}^{k=\infty} 3^{k-1} \times 2 \times (2-\sqrt{3}) \qquad \pi$$

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



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$$k \in N$$

$$\sum_{k=\infty}^{k=\infty} (-1)^{k-1} \times \sin\left(\frac{3 \times \pi}{2 \times 5^{k+1}}\right) \times \cos\left(\frac{\pi}{5^{k+1}}\right) = \frac{\sqrt{5}-1}{8}$$



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$$k \in N$$

$$\sum_{k=1}^{k=\infty} arcsin \left( \frac{\sqrt{10+2\times\sqrt{5}}\times\left(\sqrt{2^{2\times k+4}}-10-2\times\sqrt{5}-\sqrt{2^{2\times k+2}}-10-2\times\sqrt{5}\right)}{2^{2\times k+3}} \right)$$

$$= \frac{2\times\pi}{2^{2\times k+3}}$$



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

$$= \frac{\sqrt{10 + 2 \times \sqrt{5}}}{8} \pm \frac{1}{2}$$



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$$\sum_{k=1}^{k=\infty} arctg \frac{5^{k-1} \times 4 \times (\sqrt{2}-1)}{(\sqrt{2}-1)^2 + 5^{2 \times k-1}} = \frac{\pi}{8}$$

