

*In memory of Justynka, my wife*

# FORMULAS

FORMULA No.

**W09**

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

[www.and-just-math.com](http://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**

**NEW MATHEMATICAL FORMULA DAILY**

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# FORMULAS

FORMULA No.

**D091**

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$$\prod_{k=1}^{k=\infty} \cos\left(\frac{5 \times \pi}{3 \times 2^{2 \times k + 2}}\right) \times \cos\left(\frac{5 \times \pi}{3 \times 2^{2 \times k + 3}}\right) \quad k \in \mathbb{N}$$
$$= \frac{3 \times (3 \times \sqrt{2} + \sqrt{6} + 2) \times \sqrt{8 + 2 \times \sqrt{6} - 4 \times \sqrt{2} - 4 \times \sqrt{3}}}{5 \times \pi}$$

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$$\sum_{k=1}^{k=\infty} \sin\left(\frac{\pi}{2 \times 5^{k-1}}\right) \times \sin\left(\frac{\pi}{3 \times 5^{k-1}}\right) = \frac{2 + \sqrt{3}}{4} \quad k \in \mathbb{N}$$

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$$\sum_{k=1}^{k=\infty} \frac{1}{(9 - \sqrt{77}) \times k^2 + (\sqrt{77} - 5) \times k + 7 + \sqrt{77}} = \frac{1}{2} \quad k \in \mathbb{N}$$

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$k \in N$

$$\sum_{k=1}^{k=\infty} \frac{k^2 - k - 1}{(5 \times k + 6) \times (5 \times k + 11) \times (11 \times k - 6) \times (11 \times k + 5)} = 0$$

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$k \in \mathbb{N}$

$$\sum_{k=1}^{k=\infty} \frac{7^{k-1} \times [(7 \times k + 12)^{k+1} + 49 \times (7 \times k - 2)^{k-1} - 14 \times (7 \times k + 5)^k]}{[(7 \times k + 12)^{k+1} - 7 \times (7 \times k + 5)^k] \times [(7 \times k + 5)^k - 7 \times (7 \times k - 2)^{k-1}]} = \frac{1}{5}$$

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$k \in \mathbb{N}$

$$\sum_{k=1}^{k=\infty} \frac{3 \times k^2 + 17 \times k + 10}{k^6 + 17 \times k^5 + 91 \times k^4 + 181 \times k^3 + 261 \times k^2 + 209 \times k + 171} = \frac{1}{19}$$

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$k \in \mathbb{N}$

$$\sum_{k=1}^{k=\infty} \frac{84 \times k^2 - 82 \times k - 1}{(7 \times k - 6) \times (7 \times k + 1) \times (77 \times k - 76) \times (77 \times k + 1)} = \frac{1}{539}$$

**NEW MATHEMATICAL FORMULA DAILY**





We invite you every  
week and every day  
to our website  
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Thanks for:  
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