

*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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FORMULA No.

**D091**

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$k \in N$

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

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$k \in N$

$$\sum_{k=1}^{k=\infty} \frac{9 \times k^5 + 57 \times k^4 + 166 \times k^3 + 372 \times k^2 + 552 \times k + 256}{(3 \times k - 1) \times (3 \times k + 2) \times (k + 2)^3 \times (k + 3)^3 \times (k + 4)^3} = \frac{533 - 54 \times \pi^2}{54}$$

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$k \in N$

$$\sum_{k=1}^{k=\infty} \frac{k^8 + 6 \times k^7 + 23 \times k^6 + 68 \times k^5 + 113 \times k^4 + 82 \times k^3 + 5 \times k^2 - 24 \times k - 9}{k^4 \times (k+1)^4 \times (k+2)^2 \times (k+3)^2} = \frac{4 \times \pi^2 - 33}{48}$$

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$k \in N$

$$\sum_{k=1}^{k=\infty} \frac{256 \times k^4 + 128 \times k^3 + 704 \times k^2 + 472 \times k + 75}{(4 \times k + 1) \times (4 \times k + 5) \times (16 \times k^2 - 9) \times (16 \times k^2 - 1)} = \frac{\pi}{8}$$

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$k \in N$

$$\sum_{k=1}^{k=\infty} \frac{2 \times k^8 + 16 \times k^7 + 62 \times k^6 + 144 \times k^5 + 192 \times k^4 + 124 \times k^3 + 14 \times k^2 - 24 \times k - 9}{k^4 \times (k+1)^4 \times (k+2)^2 \times (k+3)^2} = \frac{4 \times \pi^2 - 33}{24}$$

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$k \in \mathbb{N}$

$$\sum_{k=1}^{k=\infty} \frac{(8 \times k^5 + 68 \times k^4 + 258 \times k^3 + 451 \times k^2 + 361 \times k + 108) \times (2 \times k)!}{(2 \times k + 1)^2 \times (2 \times k + 3)^2 \times (k + 1)!^2 \times 2^{4 \times k + 2}} = \frac{\pi - 3}{3}$$

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$$\sum_{k=1}^{k=\infty} \frac{1}{4 \times (2 \times k - 1)^2 - 2025} = \frac{\pi}{360} \quad k \in \mathbb{N}$$

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We invite you every  
week and every day  
to our website  
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