Demostración de un sistema que opera

16% Overshoot

$$0{,}16 = e^{\frac{-\mathcal{M}\pi}{\sqrt{1-\mathcal{M}^2}}} \qquad \text{Donde } \mathcal{M} = 0{,}5040$$

$$\ln(0{,}16) = \frac{-\mathcal{M}\pi}{\sqrt{1-\mathcal{M}^2}}$$

$$\left(\ln(0{,}16)\right)^2 = \left(\frac{-\mathcal{M}\pi}{\sqrt{1-\mathcal{M}^2}}\right)^2$$

$$1-\mathcal{M}^2 \left(\ln(0{,}16)\right)^2 = \left(-\mathcal{M}\pi\right)^2$$

$$(\ln(0{,}16)^2 - \mathcal{M}^2 \left(\ln(0{,}16)\right)^2 = \mathcal{M}^2\pi^2$$

$$\mathcal{M}^2\pi^2 + \mathcal{M}^2 \left(\ln(0{,}16)\right)^2 = \left(\ln(0{,}16)\right)^2$$

$$\mathcal{M}^2 \left(\pi^2 + (\ln(0{,}16))^2\right) = \left(\ln(0{,}16)\right)^2$$

$$\mathcal{M}^2 = \frac{(\ln(0{,}16))^2}{\left(\pi^2 + (\ln(0{,}16))^2\right)}$$

$$\mathcal{M} = \sqrt{\frac{(\ln(0{,}16))^2}{\left(\pi^2 + (\ln(0{,}16))^2\right)}}$$

$$\mathcal{M} = 0{,}5037 \approx 0{,}5040$$

$\cos(\theta) = 0{,}504$

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