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Demostración Tarea.

Demostrar que un sistema que opera con 16% de overshot

$$0,16 = e^{-\zeta\pi/\sqrt{1-\zeta^2}} \quad \text{Donde } \zeta = 0,504$$

$$\rightarrow \ln(0,16) = \zeta\pi/\sqrt{1-\zeta^2}$$

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

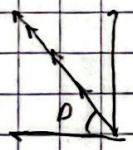
$$= \ln^2(0,16) - \ln^2(0,16)\zeta^2 = \zeta^2\pi^2$$

$$= \ln^2(0,16) = \zeta^2\pi^2 + \ln^2(0,16)\zeta^2$$

$$= \ln^2(0,16) = \zeta^2(\pi^2 + \ln^2(0,16))$$

$$= \zeta = \sqrt{\frac{\ln^2(0,16)}{\pi^2 + \ln^2(0,16)}} = \frac{\ln(0,16)}{\sqrt{\pi^2 + \ln^2(0,16)}}$$

$$= \zeta = 0,5034 \leq 0,504 \rightarrow \text{Valor que se pide}$$



$$\cos\phi = 0,504$$