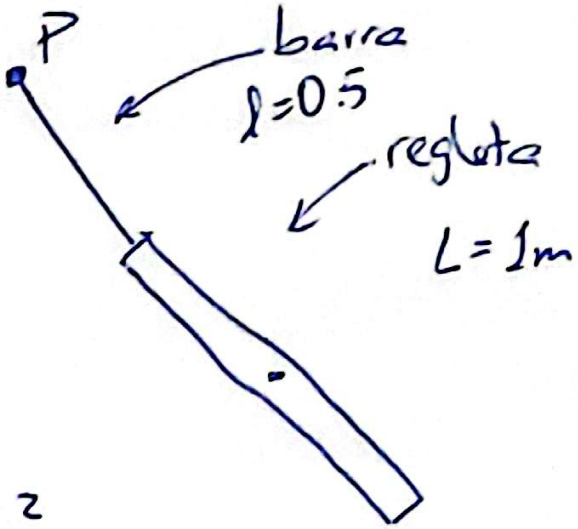
Solución Parcial 3

15.32



a) Por ejes paralelos.

$$I_p = \frac{1}{12}ML^2 + M\left(\frac{L}{2}+l\right)^2$$

valuando $I_p \sim M\left(\frac{13}{12}\ [m^2]\right)$

$$\Rightarrow T = 2\pi\sqrt{\frac{I_p}{Mg\left(\frac{L}{2}+l\right)}} = 2.09s$$

b) $$T_s = 2\pi\sqrt{\frac{1m}{g}} = 2.01s$$

$$\therefore \frac{|T_s - T|}{T_s} = 4.08\%$$

Escaneado con CamScanner

16.32

Dada la potencia media $P_{med} = \frac{1}{2}\sqrt{\mu F}\,\omega^2 A^2$

$m = 0.18\,kg$

$l = 3.60\,m$

$A = 0.1\,m$

$\lambda = 0.5\,m$

$v = 30\,m/s$

$v = \sqrt{F/\mu}$

$v \cdot \mu = \sqrt{\mu F}$

$$\left.\begin{aligned} \omega &= 2\pi\nu \\ \nu &= \frac{v}{\lambda} \end{aligned}\right\} \omega^2 = 4\pi^2 \frac{v^2}{\lambda^2}$$

Sustituyendo

$$P = \frac{1}{2}\left(\frac{m}{l}\right)\left(4\pi^2 \frac{v^3}{\lambda^2}\right)A^2$$

$$\boxed{P = 1.07\,kW}$$

Escaneado con CamScanner