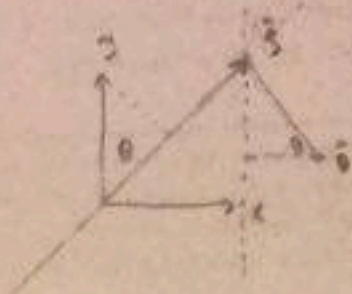
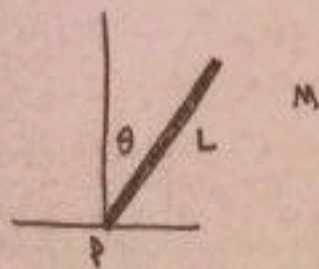


Ejercicio 6 - Pauta



(a) $E_o = -mg\frac{L}{2}(\text{sen}\theta \hat{\theta} + \text{cos}\theta \hat{\rho})$ | Por conservación | $E_o = E_2 + \frac{1}{2}I\dot{\theta}^2$

$E_r = \frac{I}{2} \dot{\theta}^2 - mg\frac{L}{2}(\text{sen}\theta \hat{\theta} + \text{cos}\theta \hat{\rho})$

$$\frac{m}{6}L^2\dot{\theta}^2 = -mg\frac{L}{2}\text{cos}\theta + mg\frac{L}{2} \Rightarrow \dot{\theta}^2 = \frac{3g}{L}(1 - \text{cos}\theta)$$

3 pts

$$I = I_{cm} + \frac{mL^2}{4}$$

$$= \frac{mL^2}{12} + \frac{3mL^2}{12} = \frac{4}{12}mL^2 = \frac{1}{3}mL^2$$

$\tau = \frac{1}{3}ML^2\ddot{\theta}$ $\tau = R\hat{\rho} \times Mg\frac{L}{2}(\text{sen}\theta \hat{\theta} - \text{cos}\theta \hat{\rho})$

$$= RMg\text{sen}\theta L$$

$$\Rightarrow \ddot{\theta} = \frac{3g}{2L}\text{sen}\theta \quad (R=L) \quad \left. \begin{matrix} \ddot{\theta}^2 = \frac{3g}{2L}\text{cos}\theta \end{matrix} \right\}$$

$$\Rightarrow \dot{\theta}^2 = \frac{3g}{L}(1 - \text{cos}\theta) \quad 3 \text{ pts}$$