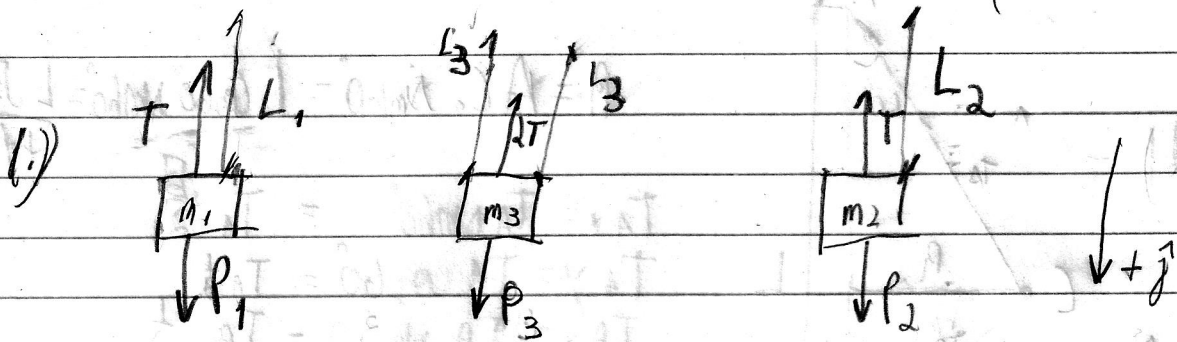


2 LISTA: Correção



$$L_1 + 2L_3 + L_2 = cte$$

$$L_1'' + 2L_3'' + L_2'' = 0$$

$$\bullet a_1 + 2a_3 + a_2 = 0 \quad (1)$$

$$\begin{cases} P_1 - T = m_1 a_1 \\ P_2 - T = m_2 a_2 \\ P_3 - 2T = m_3 a_3 \end{cases} \Rightarrow \begin{cases} 10 - T = a_1 \\ 30 - T = 3a_2 \\ 20 - 2T = 2a_3 \end{cases}$$

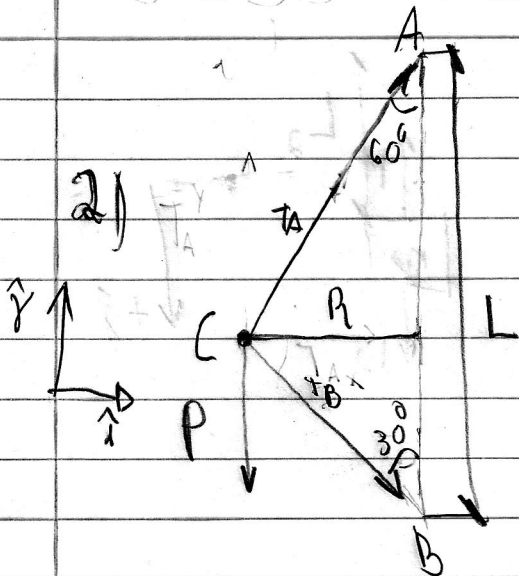
$$\Rightarrow \begin{cases} 10 - T = a_1 & (2) \\ 10 - \frac{T}{3} = a_2 & (3) \\ 20 - 2T = 2a_3 & (4) \end{cases}$$

Somando (2) + (3) + (4); e utilizando (1)

$$40 - \frac{10T}{3} = 0 \Rightarrow$$

$$T = 12 \text{ N}$$

$$\begin{cases} \vec{a}_1 = -2 \text{ m/s}^2 \begin{pmatrix} \hat{x} \\ -\hat{y} \end{pmatrix} \\ a_2 = 6 \text{ m/s}^2 \hat{y} \\ a_3 = -2 \text{ m/s}^2 \begin{pmatrix} \hat{x} \\ -\hat{y} \end{pmatrix} \end{cases}$$



$$A = AC \cdot \sin 60^\circ = L \cos 60^\circ \sin 60^\circ = \frac{L\sqrt{3}}{4}$$

$$T_{Ax} = T_A \sin 60^\circ = T_A \frac{\sqrt{3}}{2}$$

$$T_{Ay} = T_A \cos 60^\circ = T_A \frac{1}{2}$$

$$T_{Bx} = T_B \sin 30^\circ = T_B \frac{1}{2}$$

$$T_{By} = T_B \cos 30^\circ = T_B \frac{\sqrt{3}}{2}$$

em x

$$T_{Ax} + T_{Bx} = P_{cp}$$

$$T_A \frac{\sqrt{3}}{2} + T_B \frac{1}{2} = m \omega^2 \cdot R$$

$$T_A \sqrt{3} + T_B = 2 m \omega^2 \cdot \frac{L\sqrt{3}}{4}$$

$$3T_A + T_B = \frac{m \omega^2 L \cdot 3}{2} \quad (1)$$

em y

$$T_{Ay} - P - T_{By} = 0$$

$$T_A \frac{1}{2} - T_B \frac{\sqrt{3}}{2} = mg$$

$$T_A - \sqrt{3} T_B = 2mg \quad (2)$$

(1) + (2)

$$4T_A = 2mg + 3 \frac{m \omega^2 L}{2} \Rightarrow T_A = \frac{m}{2} \left(mg + 3 \frac{\omega^2 L}{4} \right) //$$

$$\Rightarrow T_B = \frac{\sqrt{3} m}{2} \left(\frac{\omega^2 L}{4} - g \right) //$$

b) Para o fio ficar frouxo:

$$T_B = 0 \Rightarrow \omega = 2 \sqrt{\frac{g}{L}} //$$