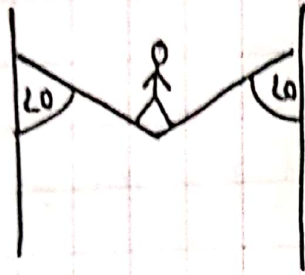
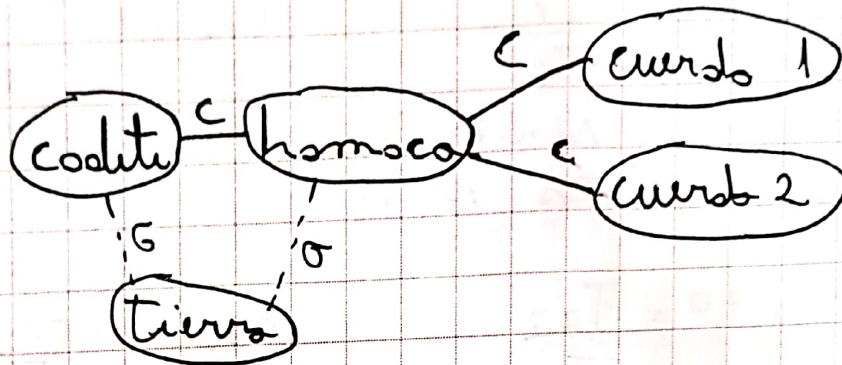


1)



hormoso = 10 kg
cadete = 60 kg

a)



b) IF cadete

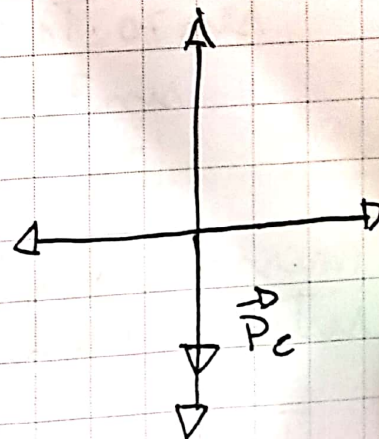
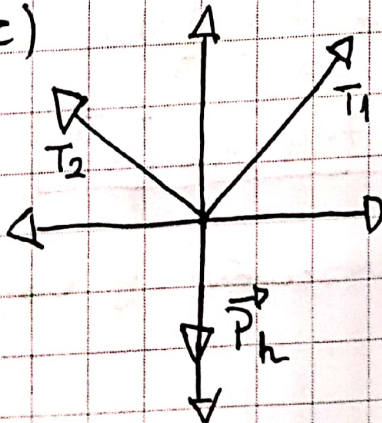
$\vec{F}_{cadete \rightarrow hormoso} : \vec{T}_G$
 $\vec{F}_{tierra \rightarrow cadete} : \vec{P}_c$

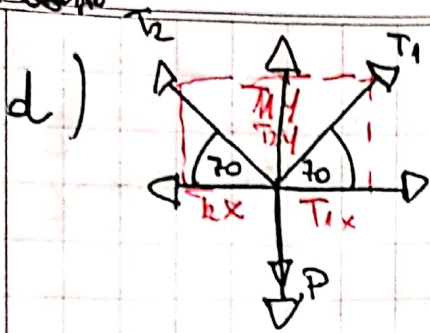
IF hormoso

$\vec{F}_{tierra \rightarrow hormoso} : \vec{P}_h$
 $\vec{F}_{cuerdo 1 \rightarrow hormoso} : \vec{T}_1$
 $\vec{F}_{cuerdo 2 \rightarrow hormoso} : \vec{T}_2$
 $\vec{F}_{hormoso \rightarrow cadete} : \vec{T}_h$

$\vec{T}_c$ y $\vec{T}_h$ son fuerzas de acción y reacción
DCL. e

c)





$$\sum \vec{T}_x = 0$$

$$\sin 70 = \frac{T_{1y}}{T_1}$$

$$\cos 70 = \frac{T_{1x}}{T_1}$$

$$\frac{T_{1y}}{T_{1x}} = \frac{\sin 70 \cdot T_1}{\cos 70 \cdot T_1}$$

$$\sin 70 = \frac{T_{2y}}{T_2}$$

$$\cos 70 = \frac{T_{2x}}{T_2}$$

$$\frac{T_{2y}}{T_{2x}} = \frac{\sin 70 \cdot T_2}{\cos 70 \cdot T_2}$$

$$\sum \vec{T}_y = 0$$

$$\vec{T}_{1y} + \vec{T}_{2y} + \vec{P} = 0$$

$$\vec{T}_{1y} + \vec{T}_{2y} - \vec{P} = 0$$

$$\sin 70 \cdot T_1 + \sin 70 \cdot T_2 = 700 \text{ [N]}$$

$$\sin 70 (T_1 + T_2) = 700 \text{ [N]}$$

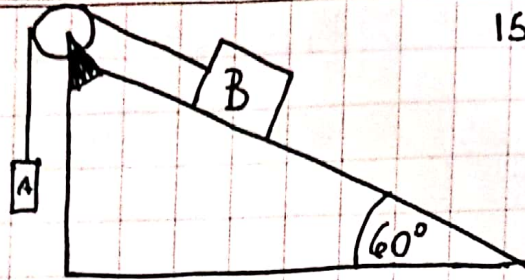
$$T_1 + T_2 = 744,92 \text{ [N]}$$

* mismo ángulo de elevación y considerando sistema ideal; $T_1 = T_2$

$$T_1 = 372,46 \text{ [N]}$$

$$T_2 = 372,46 \text{ [N]}$$

2)

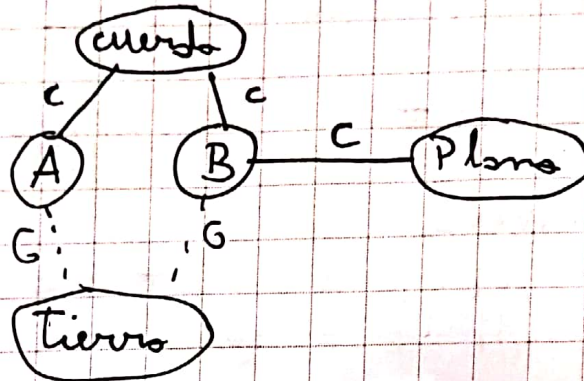


$$15 \text{ Kg} = m_A = m_B$$

$$\mu = 0,2$$

$$V=2$$

a)



IF. A

$$\vec{F}_{\text{cuerda} \rightarrow A} : \uparrow$$

$$\vec{F}_{\text{tierra} \rightarrow A} : \downarrow P_A$$

IF. B

$$\vec{F}_{\text{cuerda} \rightarrow B} : \uparrow$$

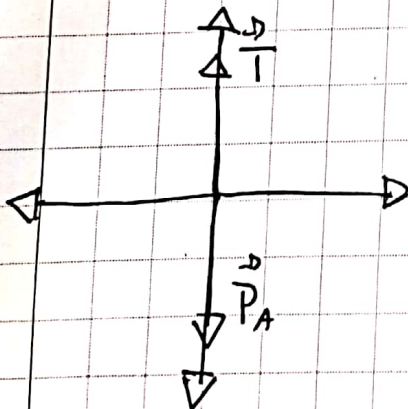
$$\vec{F}_{\text{tierra} \rightarrow B} : \downarrow P_B$$

$$\vec{F}_{\text{plano} \rightarrow B} : \vec{F}_R$$

Para A

b) DCL. A

c)



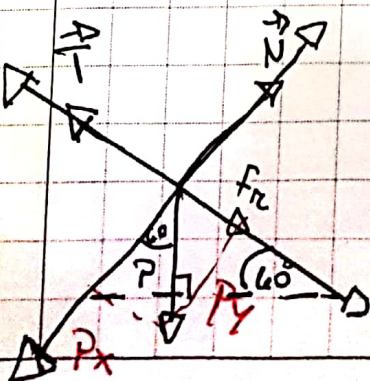
$$\sum \vec{F}_y = m \cdot a$$

$$P_A + T = m \cdot a$$

$$150[\text{N}] - T = 15a$$

$$|T = -15a + 150[\text{N}]|$$

DCL. B



Para B

$$\sum \vec{F}_y = 0$$

$$T + P_{By} = 0$$

$$T - P_{By} = 0$$

$$T = P_{By}$$

$$T = \cos 60^\circ \cdot P$$

$$T = 75 [\text{N}]$$

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PBX = 129,90

Fecha: / /

c) $\sum \vec{T}_x \neq 0$

$\sum \vec{T}_x \rightarrow T + f_R = m \cdot a$

$$-150 + 150 - 0,2 \cdot 75 = \frac{P_{BX}}{2} \cdot a$$

$$-150 + 150 - 0,2 \cdot 75 = 129,90 \cdot a$$

$$\begin{array}{l} 150 - 129,90 \cdot a = 150 - 0,2 \cdot 75 \\ a(15 - 129,90) = 135 \end{array}$$

$$a = 67,16 \left(\frac{m}{s^2} \right)$$

3)

$$a) 800 \frac{\text{rpm}}{1 \text{ min}} \cdot \frac{2\pi \text{ rad}}{1 \text{ rev}} \cdot \frac{1 \text{ min}}{60 \text{ seg}}$$

$$\omega_{\text{motor}} = 26,67 \pi \left[\frac{\text{rad}}{\text{s}} \right]$$

$$b) V = \omega \cdot R \quad V_{\text{motor}} = V_2$$

$$\omega_2 \cdot R_2 = \omega_{\text{motor}} \cdot R_{\text{motor}}$$

$$\omega_2 = \frac{\omega_{\text{motor}} \cdot R_{\text{motor}}}{R_2}$$

$$\omega_2 = \frac{26,67 \pi \cdot 0,05}{0,2}$$

$$\omega_2 = 6,67 \pi \left[\frac{\text{rad}}{\text{s}} \right]$$

$$\boxed{\omega_2 = 7 \pi \left[\frac{\text{rad}}{\text{s}} \right]}$$

c)

$$\omega_1 = \omega_2$$

$$\omega_1 = 7 \pi \left[\frac{\text{rad}}{\text{s}} \right]$$

$$V_1 = \omega \cdot R$$

$$V_1 = 7 \pi \cdot 0,1$$

$$\boxed{V_1 = 0,7 \pi \frac{\text{rad}}{\text{s}}}$$

$$d) \omega_1 = 7 \pi \left[\frac{\text{rad}}{\text{s}} \right] \cdot \frac{1 \text{ vuelta}}{2 \pi \text{ rad}}$$

$$= \frac{7}{2} \left[\frac{\text{vuelta}}{\text{s}} \right] = 3,5 \left[\frac{\text{vuelta}}{\text{s}} \right]$$

$$0,8 \text{ m} = \theta \cdot 0,1$$

$$\Delta \theta = 8$$

$$\Delta = \Delta \theta \cdot R$$

$$\Delta = 8 \cdot 0,1 = 0,8 \text{ m}$$