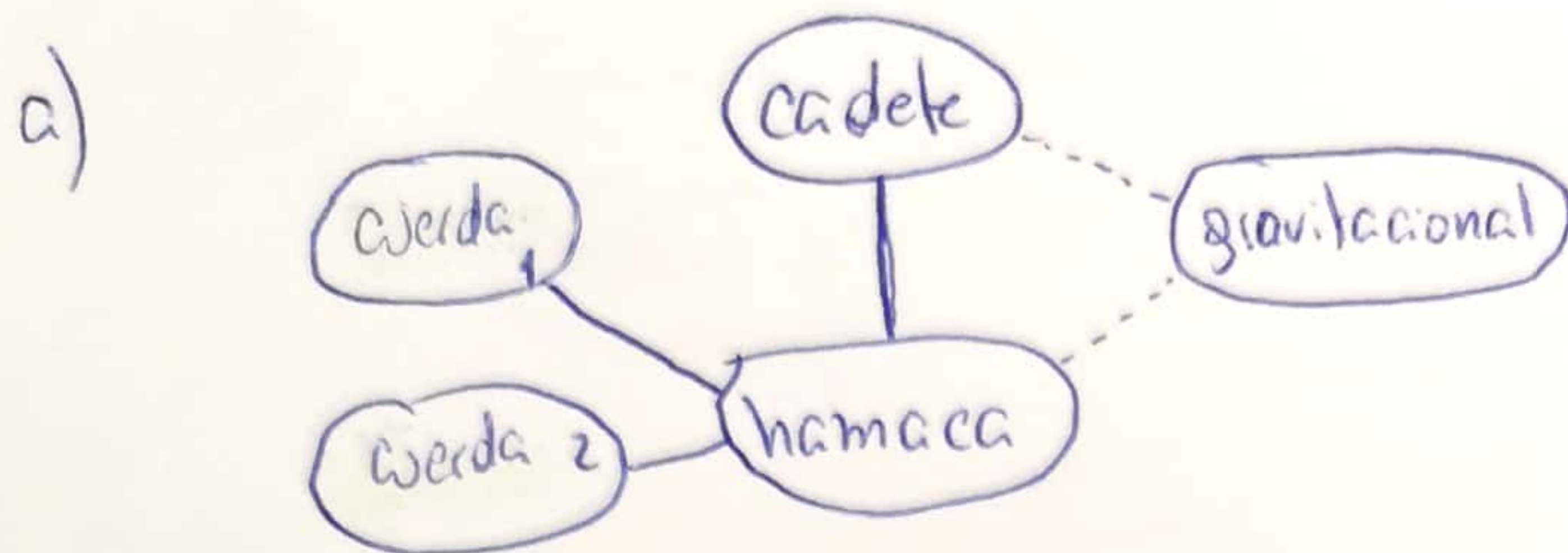


- 1) 60 [kg] $\rightarrow$ cadele $\rightarrow P_c$
10 [kg] $\rightarrow$ hamaca $\rightarrow P_H$



b) I.F. cadele

$$\vec{F}_{\text{TIERRA} \rightarrow \text{cadele}}^G = \vec{P}_c$$

$$\vec{F}_{\text{HAMACA} \rightarrow \text{CADETE}}^c = \vec{F}_c$$

I.F. HAMACA

$$\vec{F}_{\text{TIERRA} \rightarrow \text{HAMACA}}^G = \vec{P}_H$$

$$\vec{F}_{\text{CADETE} \rightarrow \text{HAMACA}}^c = \vec{F}_H$$

Acción-Reacción

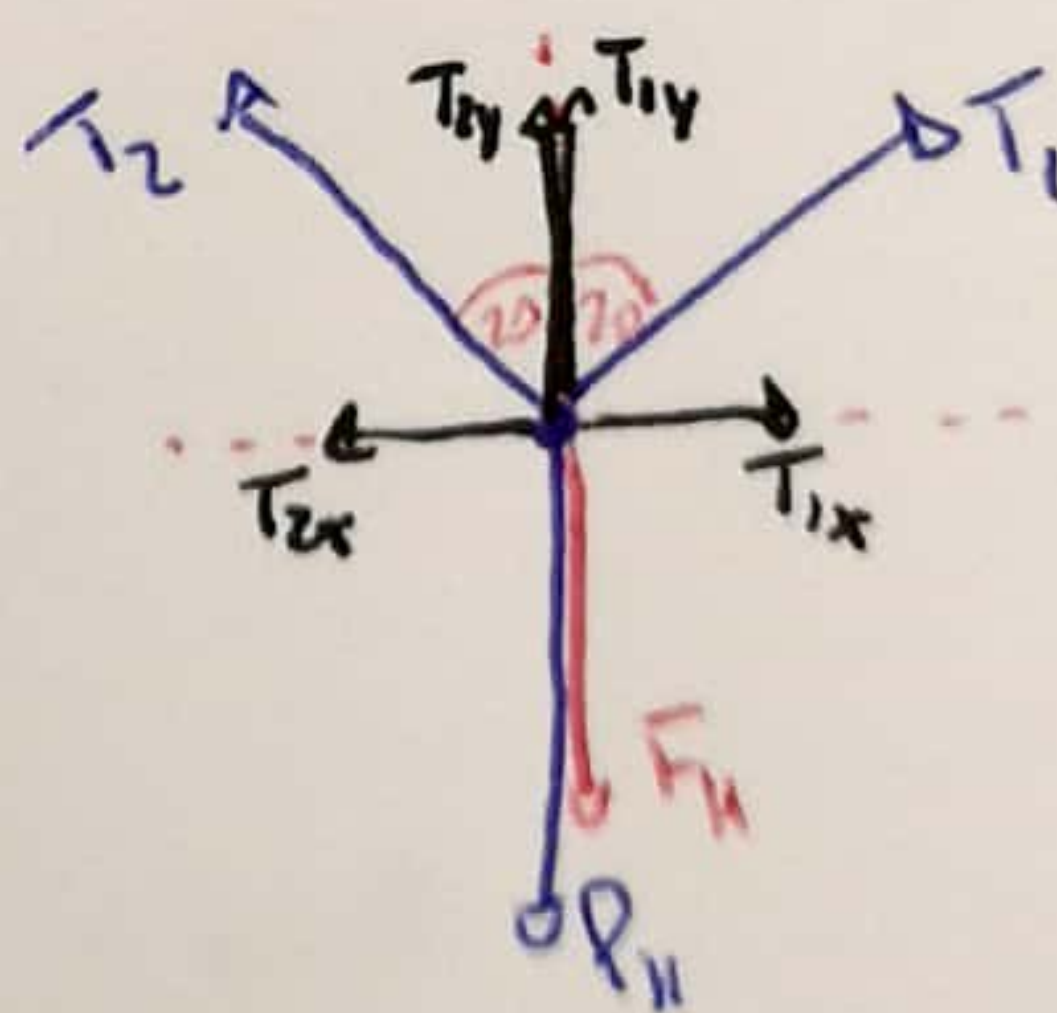
$$\vec{F}_{\text{Cuerda 1} \rightarrow \text{HAMACA}}^c = \vec{T}_1$$

$$\vec{F}_{\text{Cuerda 2} \rightarrow \text{HAMACA}}^c = \vec{T}_2$$

c) D.C.L. cadele



D.C.L. HAMACA



$$d) T_{1y} + T_{2y} = P_H + F_H$$

$$T \cdot \cos 20 + T \cdot \cos 20 = m_H \cdot g + m_c \cdot g$$

$$2(T \cdot \cos 20) = 10 \cdot 10 + 60 \cdot 10$$

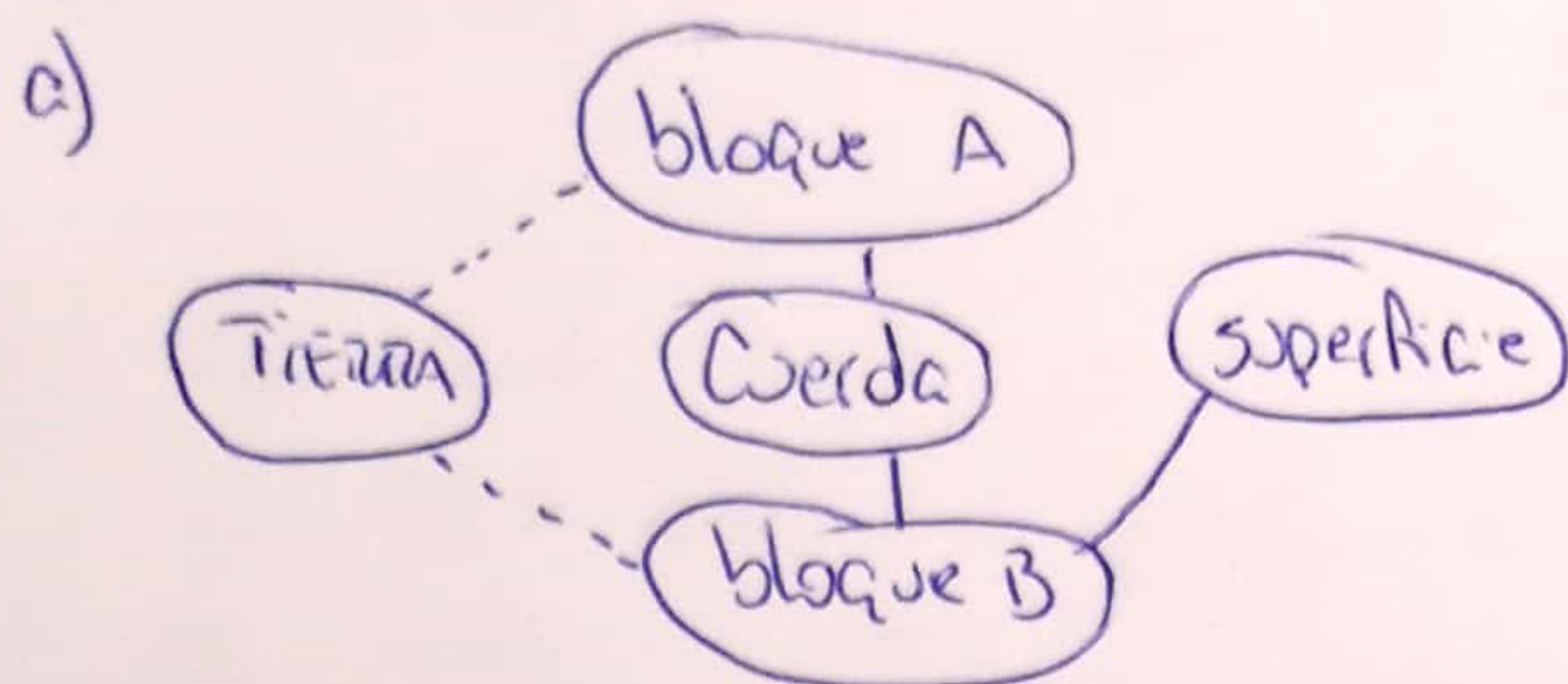
$$T \cdot \cos 20 = \frac{700}{2} \text{ (N)}$$

$$T = \frac{350}{\cos 20} = 372,46 \approx 372,5 \approx 373$$

$$T = 373 \text{ [N]}$$

[Signature]

2) masa bloques = 15 [kg]
Coef. roce = 0,2



I.F. Bloque A

$$\vec{F}_{Tierra \rightarrow A}^G = \vec{P}_A$$

$$\vec{F}_{Cuerda \rightarrow A}^C = \vec{T}_A$$

I.F. Bloque B

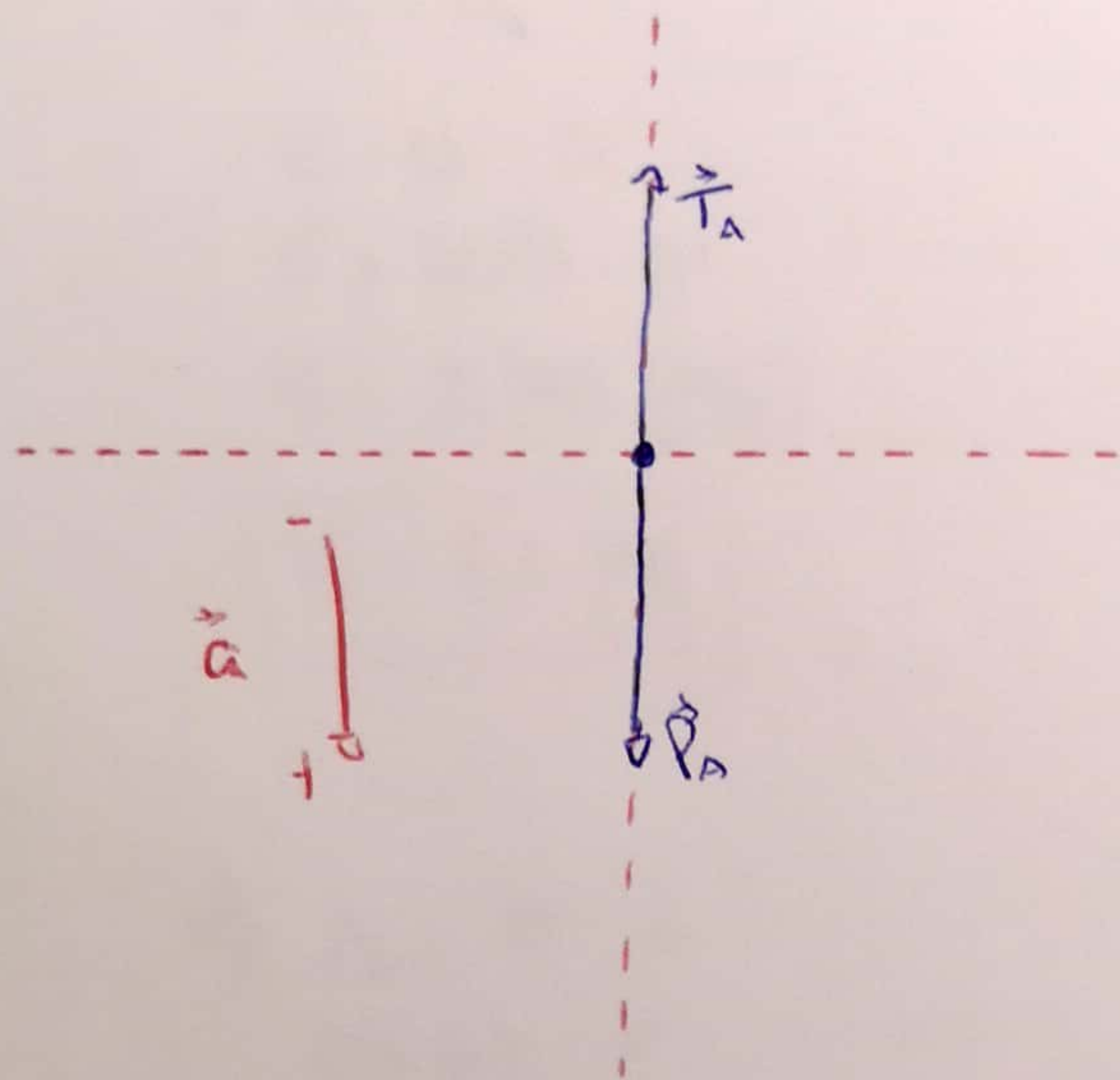
$$\vec{F}_{Tierra \rightarrow B}^G = \vec{P}_B$$

$$\vec{F}_{Cuerda \rightarrow B}^C = \vec{T}_B$$

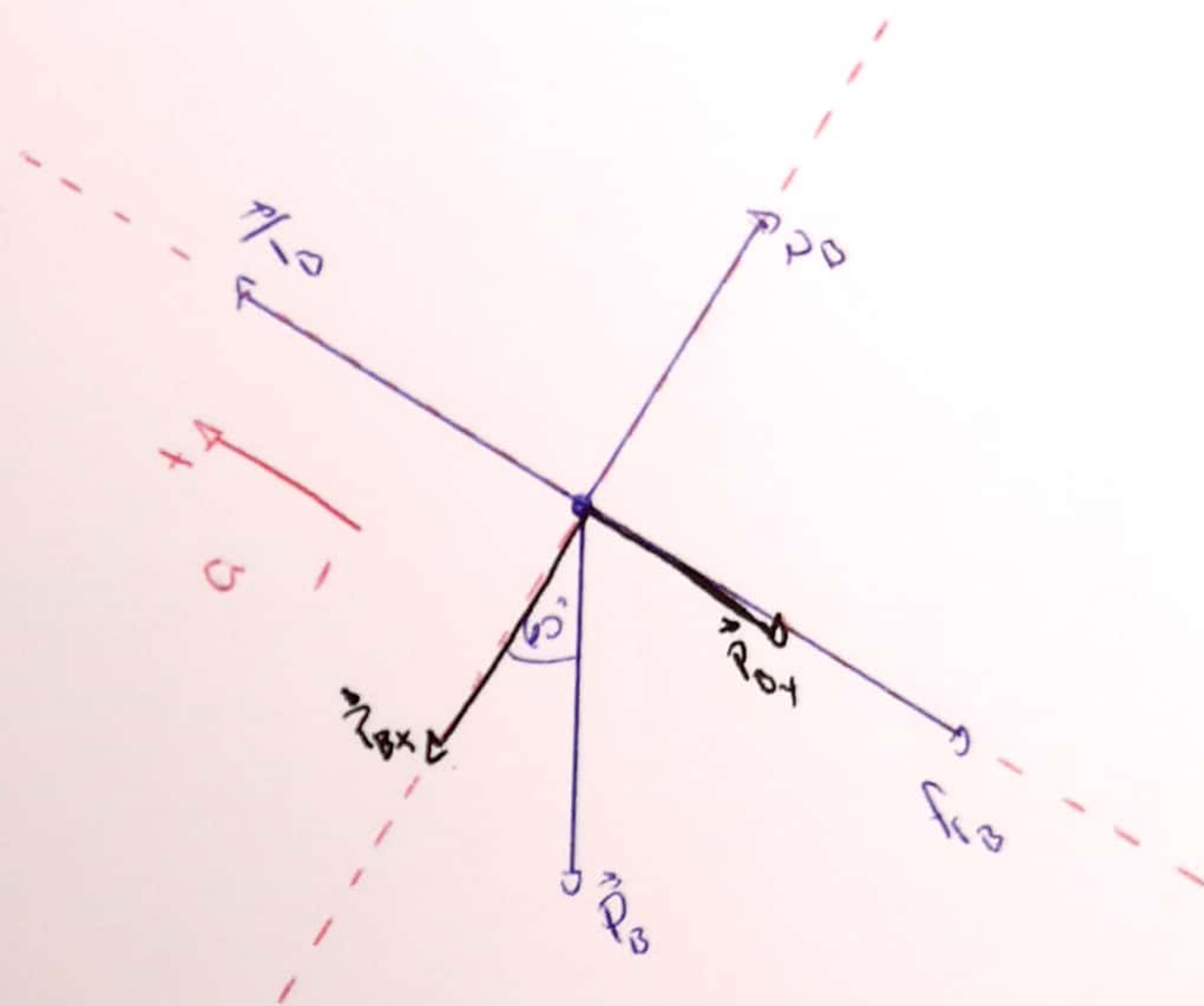
$$\vec{F}_{superf. \rightarrow B}^C = \begin{cases} \vec{N}_B \\ \vec{f}_{rB} \end{cases}$$

b) D.C.L Bloque A

$$\vec{T}_A = \vec{T}_B$$



D.C.L Bloque B



c) $\sum \vec{F} = m \cdot \vec{a}$

$$\vec{P}_A - \vec{T}_A = m \cdot \vec{a}$$

$$150(\vec{a}) - \vec{T}_A = 15 \cdot \vec{a}$$

$$150(\vec{a}) = 15\vec{a} + \vec{T}_A \quad (1)$$

$$150 = 15a + T_A \quad (1)$$

$$-114,9 = 15a - T_B \quad (2)$$

$$35,1 = 30a$$

$$\frac{35,1}{30} = a$$

$$1,17 \left[\frac{m}{s^2} \right] = a$$

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

$$\vec{T}_B - \vec{P}_{By} - f_{rB} = m \cdot \vec{a}$$

$$\vec{T}_B - m \cdot g \cdot \sin 60 - 15 = 15\vec{a}$$

$$\vec{T}_B - 75\sqrt{3} - 15 = 15\vec{a}$$

$$\vec{T}_B - 114,9 = 15\vec{a}$$

$$-114,9 = 15\vec{a} - \vec{T}_B \quad (2)$$

$$N_B = P_{Bx}$$

$$N_B = m \cdot g \cdot \cos 60$$

$$N_B = 15 \cdot 10 \cdot \cos 60$$

$$N_B = 75(\vec{a})$$

$$f_r = N_B \cdot \mu$$

$$f_r = 75 \cdot 0,2$$

$$f_r = 15(\vec{a})$$

[Signature]

Cadete IM Morandi
211

3) $R_1 = 0,1 \text{ [m]}$
 $R_2 = 0,2 \text{ [m]}$
 $R_3 = 0,05 \text{ [m]}$

a) $800 \frac{\text{rev}}{\text{min}} \rightarrow \frac{2\pi \text{ [rad]}}{1 \text{ [rev]}} \rightarrow \frac{1 \text{ [min]}}{60 \text{ [seg]}}$
 $\frac{800 \cdot 2\pi}{60} \left[\frac{\text{rad}}{\text{s}} \right] \rightarrow 83,8 \left[\frac{\text{rad}}{\text{s}} \right]$

b) $v_n = \omega_n \cdot R$
 $v_n = 83,8 \cdot 0,05$
 $v_n = 4,19$

$v_2 = \omega_2 \cdot R_2$
 $\frac{4,19}{0,2} = \omega_2$
 $20,95 \left[\frac{\text{rad}}{\text{s}} \right] = \omega_2$

$21 \left[\frac{\text{rad}}{\text{s}} \right] = \omega_2$

c) $\omega_2 = \omega_1$

$v_1 = \omega_1 \cdot R_1$
 $v_1 = 20,95 \cdot 0,1$
 $v_1 = 2,095 \text{ [m/s]}$

$v_1 = 2,1 \left[\frac{\text{m}}{\text{s}} \right]$

d) $\Delta = \theta \cdot R$
 $0,8 \text{ [m]} = \theta \cdot 0,1 \text{ [m]}$

$\theta = 8$

La rueda 1 da 8 vueltas
Cuando el cable se enrolla 80 cm.

AND