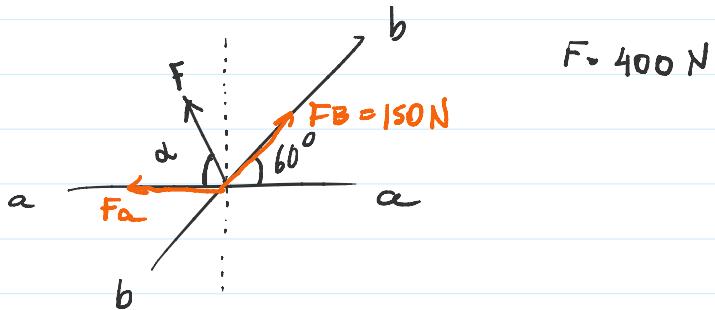


2.6)



Nome: Lucas Lima do Nascimento

$$F = 400 \text{ N}$$

$$\begin{cases} F_{Bx} + Fa = F \cdot \cos \alpha & \text{(1)} \\ F_{By} = F \cdot \sin \alpha & \text{(2)} \end{cases}$$

$$F_{Bx} = F_B \cdot \cos 60^\circ$$

$$F_{Bx} = 75 \text{ N}$$

$$F_{By} = F_B \cdot \sin 60^\circ$$

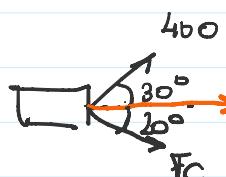
$$F_{By} = 129,9 \text{ N} \approx 130 \text{ N}$$

$$\textcircled{2} \quad F_{By} = F \cdot \sin \alpha$$

$$130 = 400 \cdot \sin \alpha$$

$$\sin \alpha = \frac{130}{400} \Rightarrow \alpha \approx 19^\circ$$

2.8)



a)

$$400 \cdot \sin 30^\circ = F_c \cdot \sin 10^\circ$$

$$200 = F_c \cdot \sin 10^\circ$$

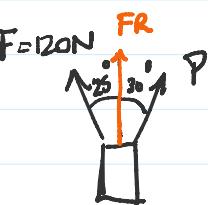
$$F_c = 584,8 \text{ N}$$

$$\text{b) } FR = 400 \cdot \cos 30 + 584,8 \cdot \cos 20$$

$$FR = 346,4 + 549,5$$

$$FR \approx 896 \text{ N}$$

2.7)



$$120 \cdot \sin 25 = P \cdot \sin 30$$

$$P = 101,4 \text{ N}$$

$$FR = 120 \cdot \cos 25 + P \cdot \cos 30$$

$$FR = 196,6 \text{ N}$$

210) Substituindo 30° por 40° , temos:

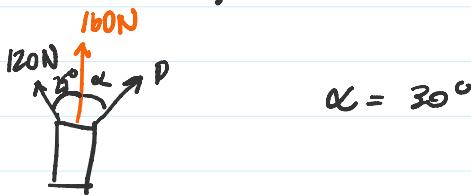
$$P = 78,9 \text{ N}$$

$$P = 78,9 \text{ N}$$

$$F_L = 177 \text{ N}$$

Was LIMA do Klassimento

2.12)



$$\alpha = 30^\circ$$

$$\begin{cases} 160 = 120 \cdot \cos 25 + P \cdot \cos 30 \\ 120 \cdot \sin 25 = P \cdot \sin 30 \end{cases}$$

$$P = 101,4 \text{ N}$$

MÓDULO = 101,4 N

DIREÇÃO = DIAGONAL

SENTIDO = PARA CIMA

2.14)



F_L

$$F_{Lx} = -200 \cdot \sin 25 + 300 \cdot \sin 45$$

$$F_{Lx} = 127,6 \text{ N}$$

$$F_{Ly} = 200 \cdot \cos 25 + 300 \cdot \cos 45$$

$$F_{Ly} = 393,4 \text{ N}$$

$$2.16) \quad F_x = 45 \cdot \cos 55 = 25,81 \text{ N}$$

$$F_y = 45 \cdot \sin 55 = 36,86 \text{ N}$$

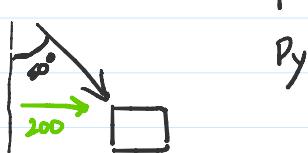
$$H_x = 75 \cos 50 = 48,2 \text{ N}$$

$$H_y = -75 \sin 50 = 57,45 \text{ N}$$

$$P_x = 60 \cdot \cos 35^\circ = 49,15 \text{ N}$$

$$P_y = 60 \cdot \sin 35^\circ = 34,41 \text{ N}$$

2.20)



$$200 = P \cdot \sin 50^\circ$$

$$P_y = P \cdot \cos 50^\circ$$

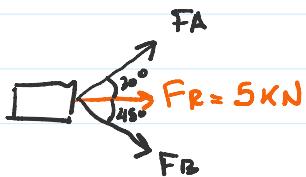
$$200 = P \cdot \sin 50^\circ$$

$P = 261 \text{ N}$

$$\begin{aligned} P_y &= P \cdot \cos 50^\circ \\ P_y &= 261 \cdot \cos 50^\circ \\ P_y &= 168 \text{ N} \end{aligned}$$

Lwas Lima do Nasimento

2.24)



$$F_{Ay} = F_{Bx} \quad (1)$$

$$F_R = F_{Ax} + F_{By} \quad (2)$$

$$\begin{cases} F_A \cdot \sin 30 = F_B \cdot \sin 45 & (1) \\ 5 \text{ kN} = F_A \cdot \cos 30 + F_B \cdot \cos 45 & (2) \end{cases}$$

$$(1) F_A \cdot \frac{1}{2} = F_B \cdot \frac{\sqrt{2}}{2} \Rightarrow F_A = \sqrt{2} \cdot F_B \quad (3)$$

$$3,7 = \sqrt{2} \cdot F_B$$

$$(2) 5 \text{ kN} = F_A \cdot \frac{\sqrt{3}}{2} + \frac{F_A}{\sqrt{2}} \cdot \frac{\sqrt{2}}{2} \quad F_B = 2,62 \text{ kN}$$

$$5 \text{ kN} = F_A \frac{\sqrt{3}}{2} + \frac{F_A}{2} \quad 10 \text{ kN} = 2,7 F_A$$

$$5 \text{ kN} = \frac{1,7 F_A}{2} + \frac{F_A}{2} \quad (3)$$

2.30)

$$\sum F_x = 0$$

$$\sum F_x = 12 \cdot \cos 10^\circ - 30 \cdot \cos 25^\circ - AC \cdot \cos 15^\circ = 0$$

$$11,82 - 27,2 - AC \frac{\sqrt{2}}{2} = 0$$

$$\underline{AC = -21,75 \text{ kN}}$$

2.32)

$$\begin{aligned} a) \quad -80 \cos \alpha + 40 \cos(90 - \alpha) + 40 &= 0 \\ -80 \sin^2 \alpha - 2 \sin \alpha + 3 &= 0 \end{aligned}$$

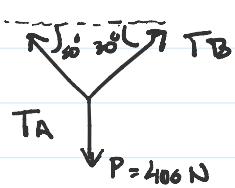
$$\alpha = 270^\circ \times$$

$$\alpha = 26,87^\circ \checkmark$$

$$b) F_R = \sum F_y$$

$$\begin{aligned} -80 \sin \alpha - 40 \cos \alpha &= -80 \text{ N} \\ &\downarrow \end{aligned}$$

2.34)



$$\begin{cases} F_R = 0 \therefore \\ T_{Ax} = T_{Bx} \quad (1) \\ T_{Ay} + T_{By} = P \quad (2) \end{cases}$$

Lucas Lima do Nascimento

$$\begin{cases} T_A \cdot \cos 60^\circ = T_B \cdot \cos 30^\circ \quad (1) \\ 400 = T_A \cdot \sin 60^\circ + T_B \cdot \sin 30^\circ \quad (2) \end{cases}$$

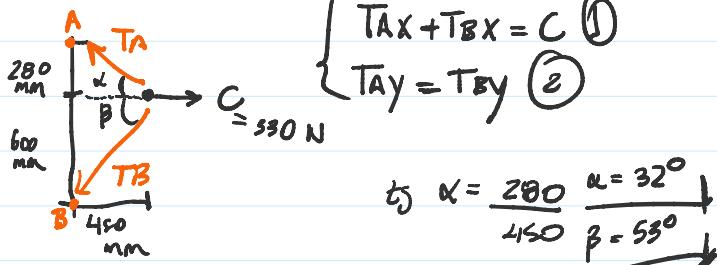
$$400 = T_A \cdot 0,77 + 0,74 T_A \cdot \frac{1}{2} \quad \underline{\underline{T_B = 260 \text{ N}}}$$

$$400 = 0,77 T_A + 0,37 T_A$$

$$400 = 1,14 T_A$$

$$\underline{\underline{T_A = 350 \text{ N}}}$$

2.36)



$$\begin{cases} T_{Ax} + T_{Bx} = C \quad (1) \\ T_{Ay} = T_{By} \quad (2) \end{cases}$$

$$\begin{matrix} \alpha = \frac{280}{450} & \alpha = 32^\circ \\ \beta = 53^\circ \end{matrix}$$

$$\begin{cases} T_A \cdot \sin 32^\circ = T_B \cdot \sin 53^\circ \quad (2) \\ 350 \text{ N} = T_A \cdot \cos 32^\circ + T_B \cdot \cos 53^\circ \quad (1) \end{cases}$$

$$350 = T_A \cdot 0,66 + 0,74 T_A$$

$$\underline{\underline{T_A = 264 \text{ N}}}$$

$$\underline{\underline{T_B = 174 \text{ N}}}$$

$$2.40) -800 \cdot \cos 30^\circ + T_B = 0$$

$$\underline{\underline{T_B = 692,82 \text{ N}}}$$

$$-600 + T_A \cdot \sin 60^\circ = 0$$

$$\underline{\underline{T_A = 692,82 \text{ N}}}$$

$$2.42) \sum F_x = 0$$

$$AC + 0,28 AB = 512 \text{ N} \quad (I)$$

$$\sum F_y = 0$$

$$-960 + AB \cdot \frac{960}{1000} + \frac{640}{s} \cdot 3 = 0$$

Woods Limp

$$\underline{AB = 600 \text{ N} \downarrow}$$

$$AC + 0,28 \cdot (600) = 512$$

$$\underline{AC = 344 \text{ N} \swarrow}$$