

$$F_r = 0$$

$$R_A + R_B = 200 \text{ N} \downarrow$$

$$\sum \tau = 0$$

$$\tau_A = R_A \cdot 8 = 8R_A$$

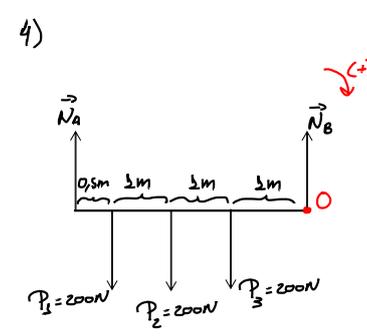
$$\tau_P = -200 \cdot 3 = -600$$

$$\tau_B = R_B \cdot 0 = 0$$

$$8R_A - 600 = 0$$

$$R_A = 75 \text{ N}$$

$$\Rightarrow R_B = 125 \text{ N} \downarrow$$



$$F_r = 0$$

$$\Rightarrow N_A + N_B = 600 \downarrow$$

$$\sum \tau = 0$$

$$\tau_{N_A} = N_A \cdot 3,5 = \frac{7N_A}{2}$$

$$\tau_{P_1} = -200 \cdot 3 = -600$$

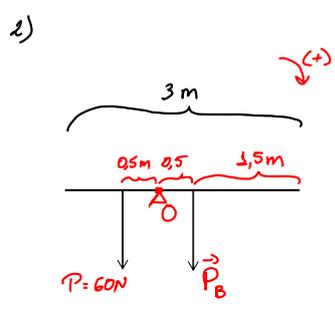
$$\tau_{P_2} = -200 \cdot 2 = -400$$

$$\tau_{P_3} = -200 \cdot 1 = -200$$

$$\tau_{N_B} = N_B \cdot 0 = 0$$

$$\frac{7N_A}{2} - 600 - 400 - 200 = 0$$

$$\Rightarrow N_A = \frac{2400}{7} \text{ N} \Rightarrow N_B = \frac{1800}{7} \text{ N}$$



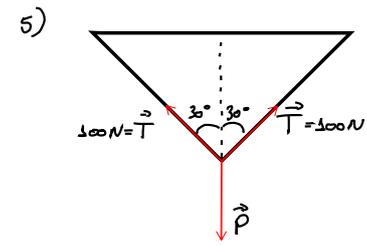
$$\sum \tau = 0$$

$$\tau_P = -60 \cdot 0,5 = -30$$

$$\tau_{P_B} = P_B \cdot 0,5 = 0,5P_B$$

$$0,5P_B - 30 = 0$$

$$\Rightarrow P_B = 60 \text{ N} \downarrow$$



$$T_y = T \cos(30^\circ)$$

$$= \frac{\sqrt{3}T}{2} = \frac{100\sqrt{3}}{2}$$

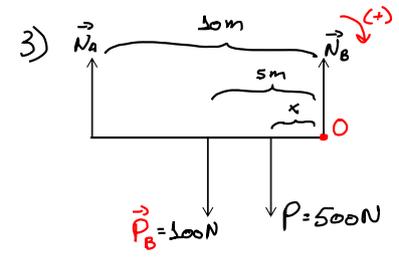
$$= 50\sqrt{3}$$

$$F_r = 0$$

$$\Rightarrow 2T_y = P$$

$$2 \cdot 50\sqrt{3} = m \cdot 10$$

$$\Rightarrow m = 10\sqrt{3} \text{ Kg} \downarrow$$



$$N_B = 2N_A$$

$$F_r = 0$$

$$N_B + N_A = 600$$

$$\Rightarrow N_A = 200 \text{ N}$$

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

$$\sum \tau = 0$$

$$\tau_{N_A} = 200 \cdot 10 = 2000$$

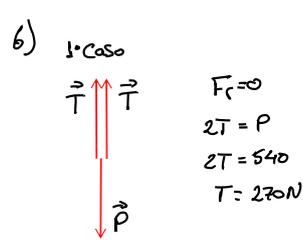
$$\tau_P = -500 \cdot 5 = -500$$

$$\tau_{P_B} = -500 \cdot x = -500x$$

$$\tau_{N_B} = 400 \cdot 0 = 0$$

$$2000 - 500 - 500x = 0$$

$$\Rightarrow x = 3 \text{ m} \downarrow$$

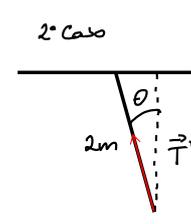


$$F_r = 0$$

$$2T = P$$

$$2T = 540$$

$$T = 270 \text{ N}$$

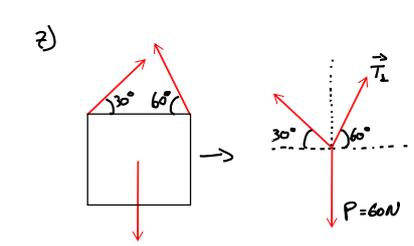


$$F_r = 0$$

$$\left\{ \begin{array}{l} 2T \cos(\theta) = P \\ \cos(\theta) = \frac{1,8}{2} \end{array} \right.$$

$$\Rightarrow 2T \cdot \frac{1,8}{2} = 540$$

$$T = 300 \text{ N} \downarrow$$



$$F_r = 0$$

$$\left\{ \begin{array}{l} T_1 \cos(\theta) = T_2 \cos(\theta) \rightarrow \frac{T_1}{2} = \frac{T_2 \sqrt{3}}{2} = T_2 \sqrt{3} \\ T_1 \sin(\theta) + T_2 \sin(\theta) = P \end{array} \right.$$

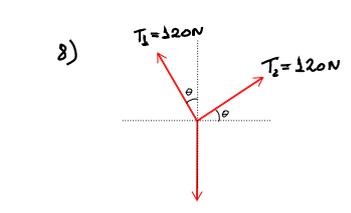
$$\frac{T_1}{2} = T_2 \sqrt{3}$$

$$\frac{T_1 \sqrt{3}}{2} + \frac{T_1}{2} = 60$$

$$\frac{T_1 \sqrt{3} + T_1}{2} = 60$$

$$\Rightarrow T_1 = 20\sqrt{3} \text{ N}$$

$$T_2 = 60 \text{ N} \downarrow$$



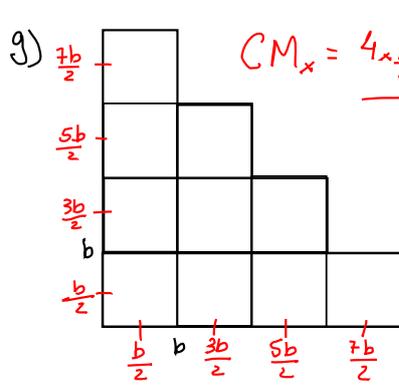
$$F_r = 0$$

$$P = T_1 y + T_2 y$$

$$P = T_1 \cos(\theta) + T_2 \sin(\theta)$$

$$P = 120 \cdot 0,8 + 120 \cdot 0,6$$

$$P = 168 \text{ N}$$



$$CM_x = \frac{4 \cdot \frac{b}{2} + 3 \cdot \frac{3b}{2} + 2 \cdot \frac{5b}{2} + 1 \cdot \frac{7b}{2}}{4 + 3 + 2 + 1}$$

$$= \frac{15b}{10} = \frac{3b}{2} \downarrow$$

Por simetria

$$CM_y = CM_x \downarrow$$