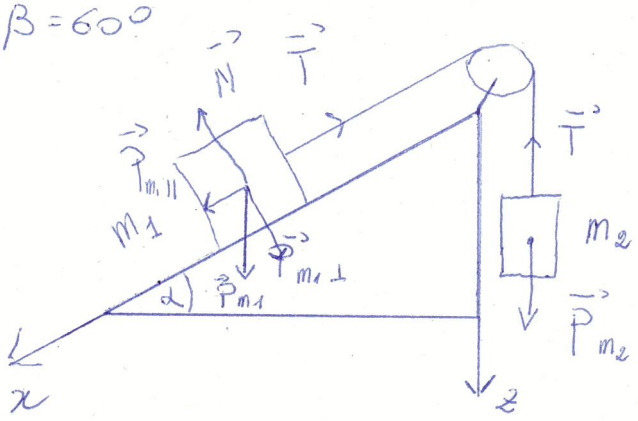
# Problema 13

$m_1 = 0{,}2\ kg$

$m_2 = 0{,}18\ kg$

$\alpha = 30°$

$\beta = 60°$




$$\vec{T} + \vec{P}_{m_2} = m_2 \vec{a}_2$$

$$\vec{T} + \vec{P}_{m_1 //} = m_1 \vec{a}_1$$

$$\vec{N} + \vec{P}_{m_1 \perp} = 0$$

$$|a_1| = |a_2|$$

il verso di $a_2$ è opposto ad $a_1$

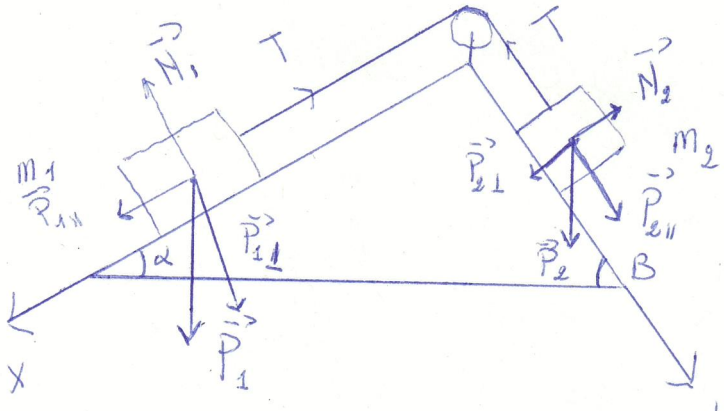
$$a_2 = -a_1$$

$$\begin{cases} m_2 g - T = m_2 a_2 \\ m_1 g \sin\alpha - T = m_1 a_1 \end{cases} \Rightarrow \begin{cases} T = m_2 (g - a_2) \\ m_1 g \sin\alpha - m_2 (g - a_2) = -m_1 a_2 \end{cases} \Rightarrow$$

$$\Rightarrow (m_1 + m_2) a_2 = g (m_2 - m_1 \sin\alpha) \Rightarrow a_2 = g \frac{m_2 - m_1 \sin\alpha}{m_1 + m_2} = \frac{0{,}18 - 0{,}10}{0{,}38} g$$

$$= 2{,}06\ m/s^2$$

$$T = 1{,}38\ N$$




$$\vec{T} + \vec{P}_{2 //} = m_2 \vec{a}_2$$

$$\vec{T} + \vec{P}_{1 //} = m_1 \vec{a}_1$$

$|a_1| = |a_2|$ $m_2$ verso opposto

$$\begin{cases} m_2 g \sin\beta - T = m_2 a_2 \\ m_1 g \sin\alpha - T = -m_1 a_2 \end{cases}$$

$$T = m_2 (g \sin\beta - a_2)$$

$$m_1 g \sin\alpha - m_2 (g \sin\beta - a_2) = -m_1 a_2 \Rightarrow a_2 = g \frac{m_2 \sin\beta - m_1 \sin\alpha}{m_1 + m_2} = \frac{1{,}44}{9{,}8} = 0{,}15\ m/s$$

$$T = 1{,}27\ N$$