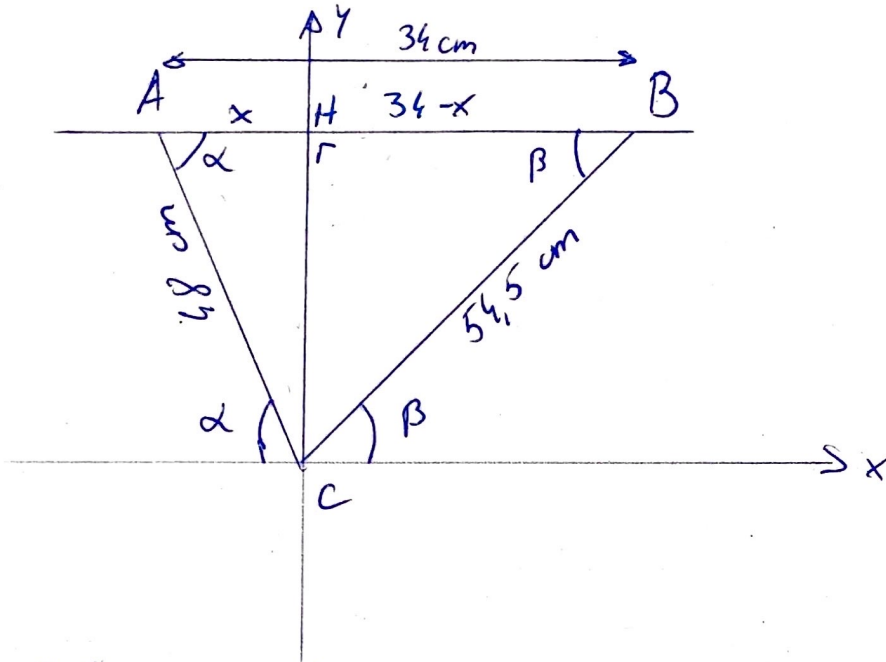


E)



• Déterminer la géométrie, les angles du  $\Delta ABC$

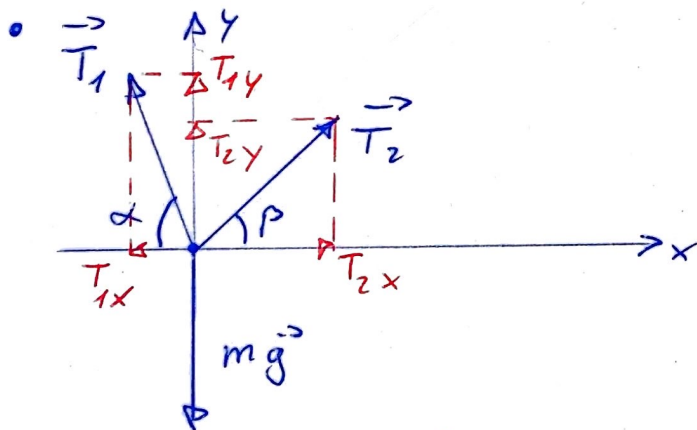
Par Pythagore:

$$48^2 - x^2 = 54,5^2 - (34-x)^2$$

$$\Rightarrow x \approx 7,2022 \text{ cm}$$

$$\bullet \cos \alpha = \frac{7,2022}{48} \Rightarrow \alpha \approx 81,4^\circ$$

$$\cos \beta = \frac{34 - 7,2022}{54,5} \Rightarrow \beta \approx 60,5^\circ$$



$$T_1 = 4,7 \text{ [N]}$$

Equilibre des forces:

$$\Sigma \vec{F} = \vec{0} \Rightarrow \begin{cases} \Sigma F_x = 0 \\ \Sigma F_y = 0 \end{cases} \Rightarrow \begin{cases} -T_1 \cdot \cos \alpha + T_2 \cdot \cos \beta = 0 \\ T_1 \sin \alpha + T_2 \sin \beta - mg = 0 \end{cases}$$

$$\Rightarrow \begin{cases} T_2 = \frac{T_1 \cos \alpha}{\cos \beta} \\ T_1 \sin \alpha + T_1 \frac{\cos \alpha}{\cos \beta} \sin \beta - mg = 0 \end{cases}$$

$$m = \frac{T_1 \left( \sin \alpha + \frac{\cos \alpha}{\cos \beta} \sin \beta \right)}{g}$$

$$= \frac{4,7 \left( \sin 81,4^\circ + \frac{\cos 81,4^\circ}{\cos 60,5^\circ} \sin 60,5^\circ \right)}{9,81}$$

$$\approx 0,600 \text{ [kg]}$$

La masse est de  $\approx 600$  [g].

(2)