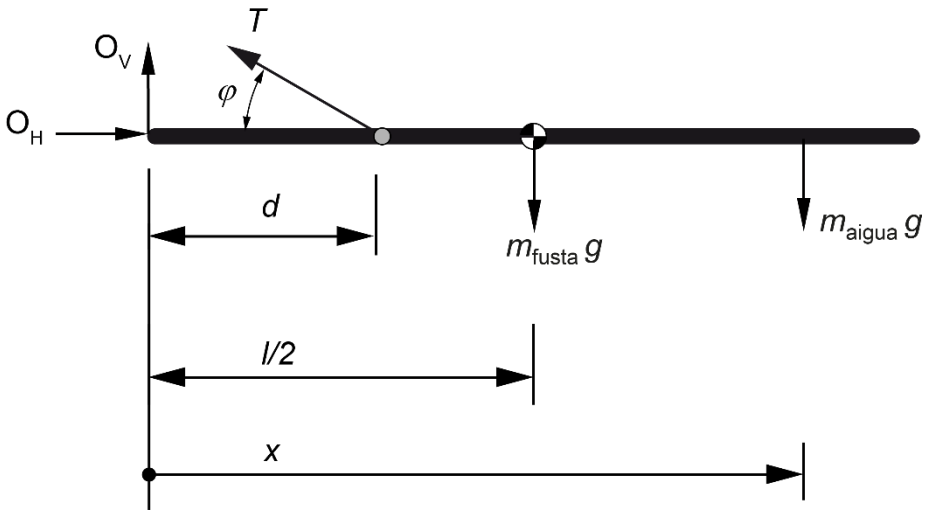
Exercici 4

a)



b)

$$\Sigma M\left(\mathrm{O}\right)=0$$

$$T\sin\varphi\, d - m_{\text{fusta}}g\ \frac{l}{2} - m_{\text{aigua}}g\ x = 0$$

$$T=\frac{m_{\text{fusta}}g\ \frac{l}{2}+m_{\text{aigua}}g\ x}{\sin\varphi\, d}=\frac{0,75\cdot 9,807\cdot\frac{1}{2}+2\cdot 9,807x}{\sin(30)\cdot 0,3}=24,52+130,8x$$

c)

$$T_{\text{màx}}=\sigma\ S=\sigma\ \pi\frac{{d_{\text{f}}}^2}{4}=80\pi\frac{1,4^2}{4}=123,2\text{N}$$

d)

$$x_{\text{màx}}=\frac{T_{\text{màx}}\sin\varphi\, d - m_{\text{fusta}}g\ \frac{l}{2}}{m_{\text{aigua}}g}=\frac{T_{\text{màx}}\frac{0,3}{2}-0,75g\ \frac{1}{2}}{2g}=0,7543\,\text{m}$$