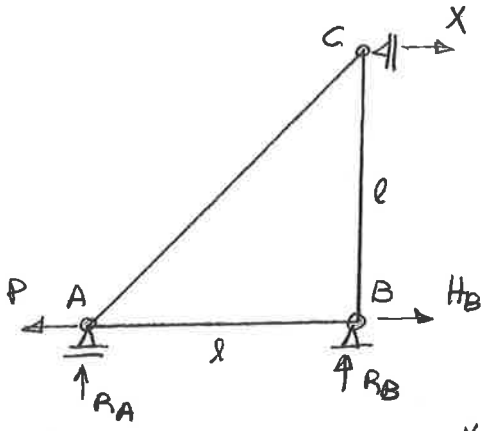
a) Equil.

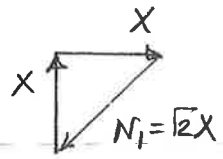
$\uparrow \quad \{ \; R_A = -R_B$

$@B \quad \{ \; P_A \cdot \ell + X \cdot \ell = 0 \Rightarrow R_A = -X$

$R_B = X$

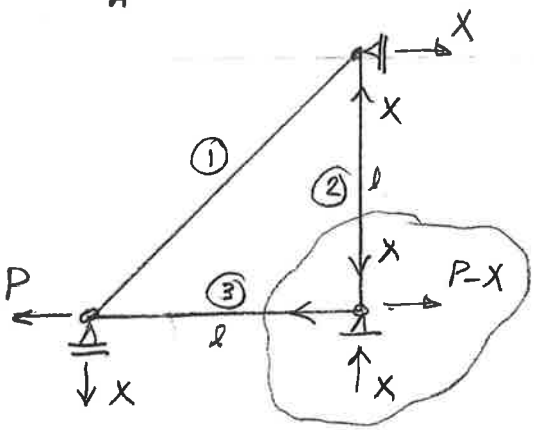
$\rightarrow \quad \{ \; -P + X + H_B = 0 \Rightarrow H_B = P - X$





$N_1 = \sqrt{2}X$

b) Eqs constitutives



$N_1 = \sqrt{2}X$

$N_2 = -X$

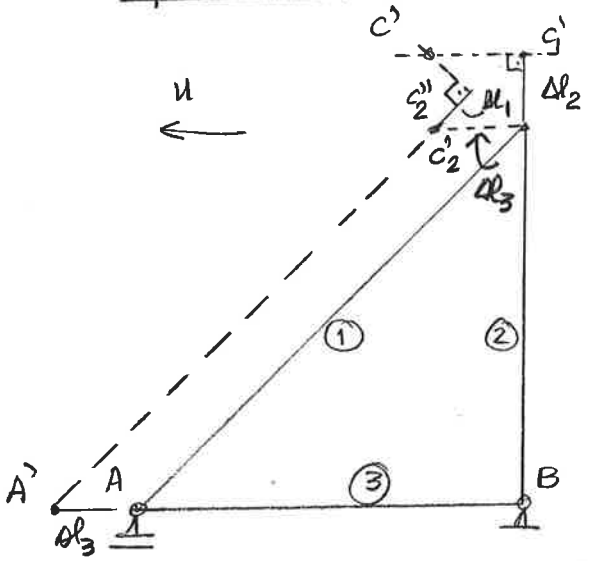
$N_3 = P - X$

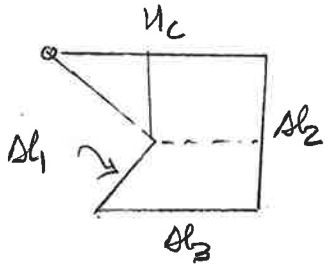
$\Delta\ell_1 = \dfrac{\sqrt{2}X \, \sqrt{2}\ell}{EA} = \dfrac{2X\ell}{EA}$

$\Delta\ell_2 = -\dfrac{X\ell}{EA}$

$\Delta\ell_3 = \dfrac{(P-X)\ell}{EA}$

c) Eq. de compatibili// $\quad u_C = 0$

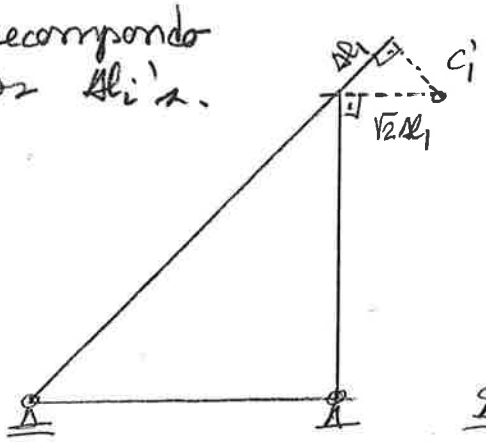


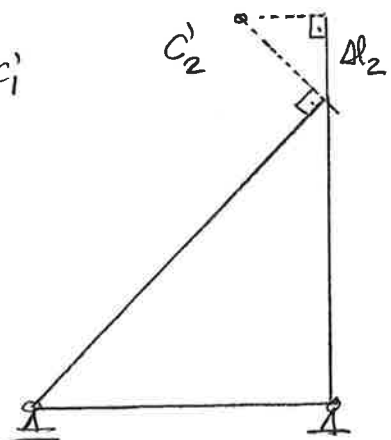


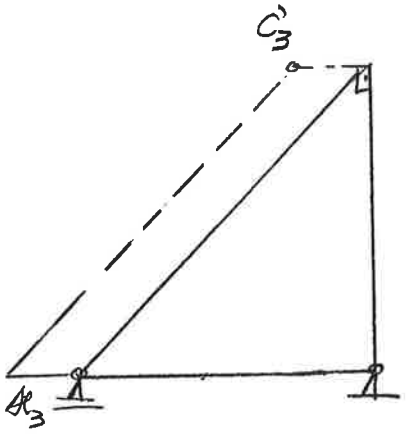
$$u_C = \Delta\ell_3 - \frac{\Delta\ell_1}{\sqrt{2}} + \left(\Delta\ell_2 - \frac{\Delta\ell_1}{\sqrt{2}}\right)$$

$$= \Delta\ell_3 - \sqrt{2}\Delta\ell_1 + \Delta\ell_2$$

- Decomposons $\Delta\ell_i$:







$$u_c = 0 \Rightarrow \frac{(P-X)\ell}{EA} - \frac{2\sqrt{2}X\ell}{EA} - \frac{X\ell}{EA} = 0 \Rightarrow (1+2\sqrt{2}+1)X = P$$

$$X = \frac{P}{2(1+\sqrt{2})} = \frac{\sqrt{2}-1}{2}P = 0{,}207P$$

Substituindo,

$$N_1 = \sqrt{2}X = \frac{2-\sqrt{2}}{2}P = 0{,}293P$$

$$N_2 = -X = -\frac{\sqrt{2}-1}{2}P = -0{,}207P$$

$$N_3 = P - X = \frac{3-\sqrt{2}}{2}P = 0{,}793P$$