

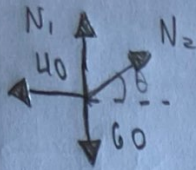
Igor Elk Ferreira Kubota

Grupo 2

Ra: 19.02466-5

Igor Elk

a)



$$\theta = \arctan\left(\frac{3}{4}\right)$$

$$\theta \approx 36,87^\circ$$

$$N_{2x} - 40 = 0 \quad y = 0$$

$$\cos(37^\circ) N_2 = 40$$

$$N_2 = \frac{40}{\cos(37^\circ)}$$

$$N_2 = +50,00 \text{ kN}$$

↳ tração

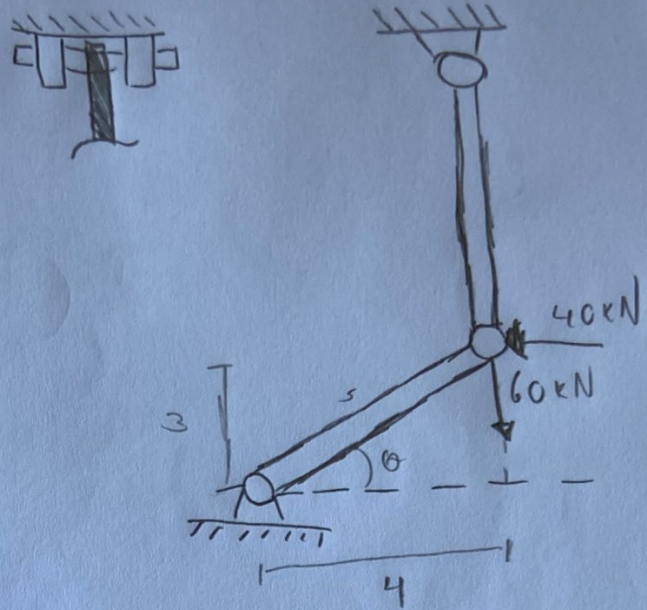
$$N_1 - 60 + N_{2y} = 0$$

$$N_1 = 60 - 50 \sin 37^\circ$$

$$N_1 = +29,86 \text{ kN}$$

$$N_1 = +29,86 \text{ kN}$$

↳ compressão



$$b) \quad S = \frac{6 \text{ lim}}{6 \text{ atuante}} = \frac{120}{160} = \frac{3}{4}$$

$$S = 0,75$$

$$c) \quad \Delta L_2 = \frac{50 \cdot 10^3 \cdot 5}{180 \cdot 10^9 \cdot 0,0004}$$

$$= \frac{250 \cdot 10^3}{0,072 \cdot 10^9} \approx \frac{250}{0,072} \cdot 10^{-6}$$

$$\Delta L_2 = 3,47 \text{ mm}$$



Igor Eiki FERREIRO Kubota

Grupo 2

Ra: 19.02466-3

Igor Eiki

d-)  $\Delta a = \epsilon_t \cdot a$

$$\Delta a = \frac{\Delta l}{l} (\nu) \cdot a$$

$$\Delta a = -0,4 \cdot \frac{3,47 \cdot 10^{-3}}{5} \cdot 20 \cdot 10^{-3}$$

$$\Delta a = 0,005552 \text{ mm}$$

e-)  $\tau = \frac{V}{A}$

$$\tau = \frac{N_1}{2\pi \frac{d^2}{4}} = \frac{30 \cdot 10^3}{2\pi \frac{d^2}{4}}$$

$$160 \cdot 10^6 = \frac{30 \cdot 10^3}{2\pi \frac{d^2}{4}}$$

$$\frac{2\pi d^2}{4} \cdot 160 \cdot 10^6 = 30 \cdot 10^3$$

$$80\pi d^2 \cdot 10^3 = 30$$

$$d^2 = \frac{30 \cdot 10^{-3}}{80\pi}$$

$$d^2 = \frac{0,375 \cdot 10^{-3}}{\pi}$$

$$d^2 = 0,12 \cdot 10^{-3}$$

$$d = 10,93 \text{ mm}$$