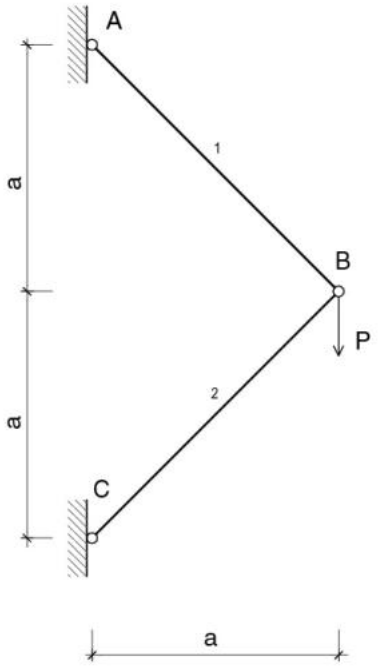
Determinar o valor da máxima força P que pode atuar na treliça da figura sabendo que o seu material possui tensões admissíveis $\overline{\sigma}_t = \overline{\sigma}_c = 10$ kN/cm²

$A_1 = 10cm^2$

$A_2 = 30cm^2$



1_

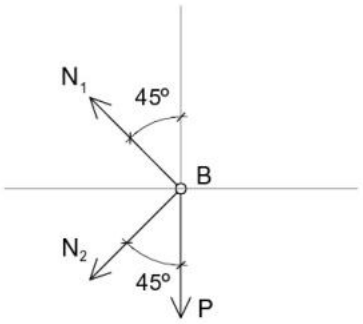
equilíbrio do nó B - determinação de N_1 e N_2 :

$$\sum X = 0$$

$$- N_1 \cdot \cos 45^\circ - N_2 \cdot \operatorname{sen} 45^\circ = 0$$

$$- N_1 \frac{\sqrt{2}}{2} = - N_2 \frac{\sqrt{2}}{2} = 0$$

$$N_1 = - N_2$$



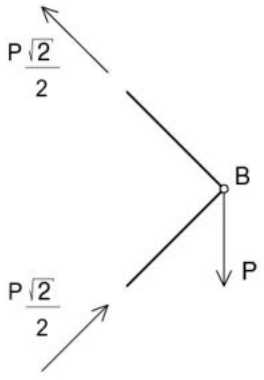
$$\sum Y = 0$$

$$N_1 \cdot \operatorname{sen} 45^\circ - N_2 \cdot \cos 45^\circ - P = 0$$

$$- N_2 \frac{\sqrt{2}}{2} - P - N_2 \frac{\sqrt{2}}{2} = 0$$

$$N_2 = - \frac{P}{\sqrt{2}} = - P \frac{\sqrt{2}}{2}$$

$$N_1 = - N_2 = P \frac{\sqrt{2}}{2}$$



$$\text{máx}\, \sigma_t = \frac{N_1}{A_1} = \frac{P \frac{\sqrt{2}}{2}}{10} \leq \overline{\sigma}_t = 10$$

$$P \leq 100\sqrt{2}$$

$$\text{máx}\, \sigma_c = \frac{N_2}{A_2} = \frac{P \frac{\sqrt{2}}{2}}{30} \leq \overline{\sigma}_c = 10$$

$$P \leq 300\sqrt{2}$$

$$\text{máx}\, P = 100\sqrt{2} = 141{,}4 \text{ kN}$$