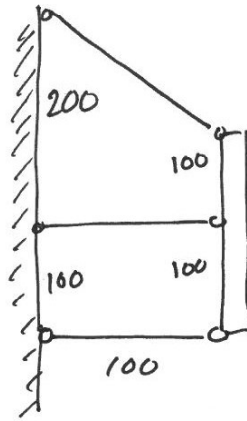


2.2.2

Stel bom m. vikt

Givet



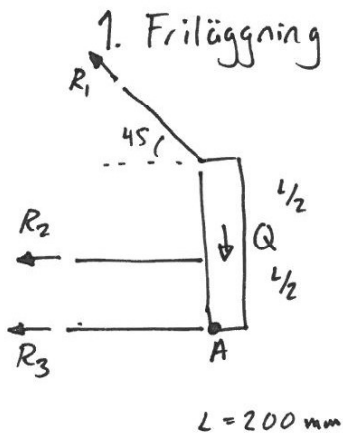
x vikt 100 kg

x tvärsnittsarea $A = 100 \text{ mm}^2$

x $g = 9.81 \text{ m/s}^2$

Sökt Normalspänning i länkarna

Lösning



2. $\sum \nu$

$$\uparrow: -Q + 50 \cdot 45^\circ \cdot R_1 = 0$$

$$\Rightarrow R_1 = \sqrt{2} \cdot Q$$

$$\rightarrow: -R_2 - R_3 - \cos 45^\circ \cdot R_1 = 0$$

$$R_1 = \sqrt{2} R_2 + \sqrt{2} R_3$$

$$\curvearrowright: \frac{L}{2} \cdot R_2 + L \cdot \cos 45^\circ \cdot R_1 = 0$$

$$R_1 = -\sqrt{2} \cdot \frac{1}{2} \cdot R_2$$

3. Snitta / 4. $\sum \nu$

$$(\dots) \Rightarrow \begin{aligned} R_1 &= N_1 \\ R_2 &= N_2 \\ R_3 &= N_3 \end{aligned}$$

$$\Rightarrow N_1 = \sqrt{2} Q$$

$$N_2 = -2Q$$

$$N_3 = 3Q$$

5. Normalspänning

$$\left[\sigma = \frac{N}{A} \right]$$

$$Q = m \cdot g = 100 \cdot 9.82 \text{ N}$$

$$\sigma_1 = \frac{\sqrt{2} \cdot Q}{A} = \dots = 13.88 \text{ MPa}$$

$$\sigma_2 = \frac{-2Q}{A} = \dots = -19.62 \text{ MPa}$$

$$\sigma_3 = \frac{3Q}{A} = \dots = 29.43 \text{ MPa}$$