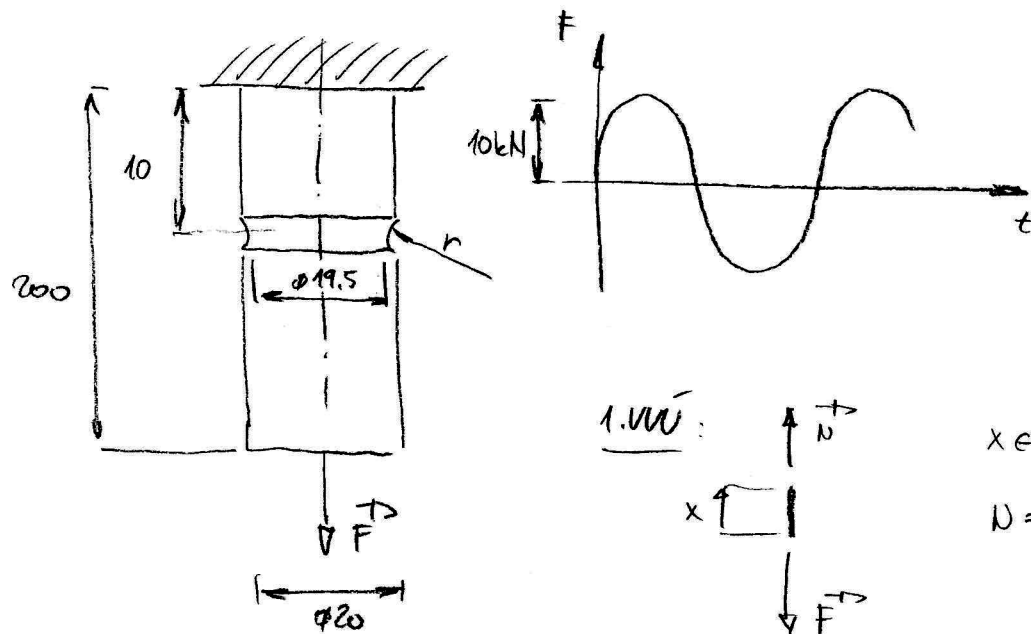


Pr: Uvete bezpečnost vzhledem k HS neomezené životnosti u současně podle obvráten.



materiál ocel
povrch současně je leštěn a bez tepelné zpracování

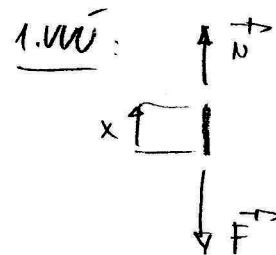
$$\sigma_{pt} = 600 \text{ MPa}$$

$$\sigma_c = 210 \text{ MPa}$$

$$\alpha = 3$$

$$r = 2$$

$$h_1 = 10 \text{ mm}$$



$$x \in (0, 200)$$

$$N = F$$

2. Řešení:

$$\sigma_c^* = \frac{\gamma_\sigma \gamma_s}{\beta_\sigma} \sigma_c = \frac{0.92 \cdot 0.99}{2.55} \cdot 210 = 45 \text{ MPa} \Rightarrow k_\sigma = \frac{\sigma_c^*}{\sigma} = \frac{45}{33.5} = 2.24 \parallel$$

$$\sigma = \frac{N}{S} = \frac{4F}{\pi d^2}$$

$$\sigma = \frac{40000}{\pi \cdot 19.5^2} = 33.5 \text{ MPa}$$

součinatel velikosti:

$$\gamma_\sigma = \gamma_1 \cdot \gamma_2 = 0.92 \cdot 1 = 0.92$$

$$\gamma_1 = 1 - \sqrt{k \cdot \log \frac{h}{h_1}} = 1 - \sqrt{2 \cdot 10^{-2} \cdot \log \frac{20}{10}} = 0.92$$

$$\gamma_2 = 1$$

součinatel umbru:

$$\beta = \frac{\alpha}{1 + \frac{\alpha-1}{\alpha} \cdot \frac{k}{r}} = \frac{3}{1 + \frac{3-1}{3} \cdot \frac{0.34}{12}} = 2.55$$

$$k = \frac{220}{\sigma_{pt}} = \frac{220}{600} = 0.84$$

součinatel povrchu:

$$\eta_\sigma = \eta_1 \cdot \eta_2 = 0.99$$

$$\eta_1 = 0.99$$

$$\eta_2 = 1$$