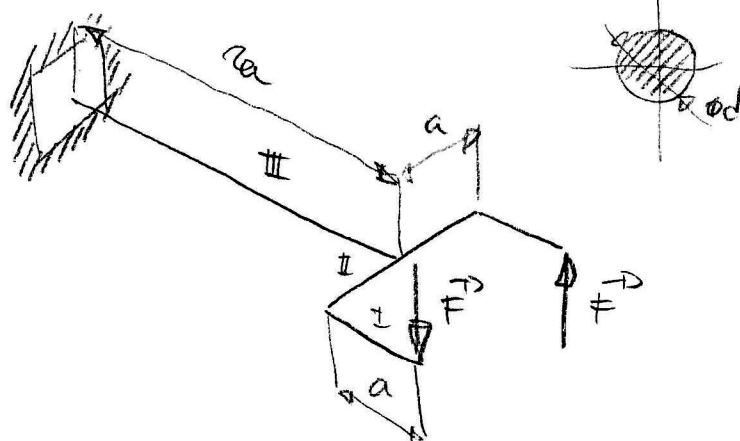


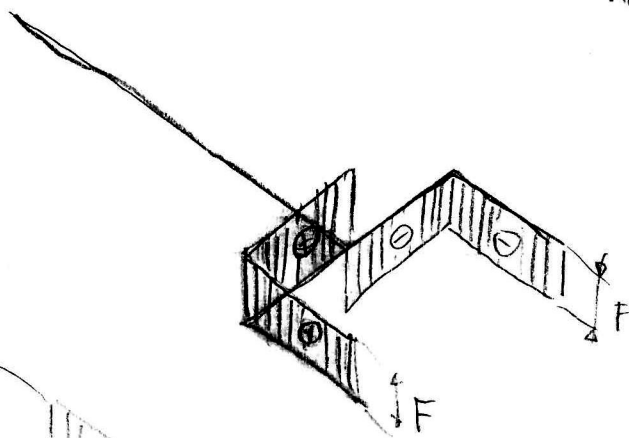
~~P:~~ Účele bezpečnost vzhledem k HIS pružnosti.

Dáno: $E, \mu, F, d, a, \sigma_k$

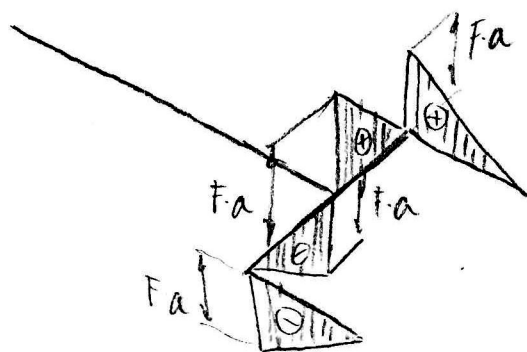


1. VVV

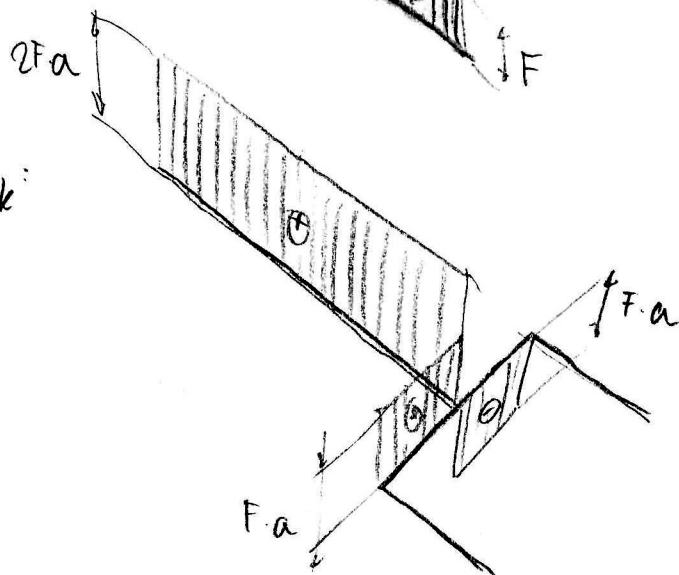
T:



H₀:

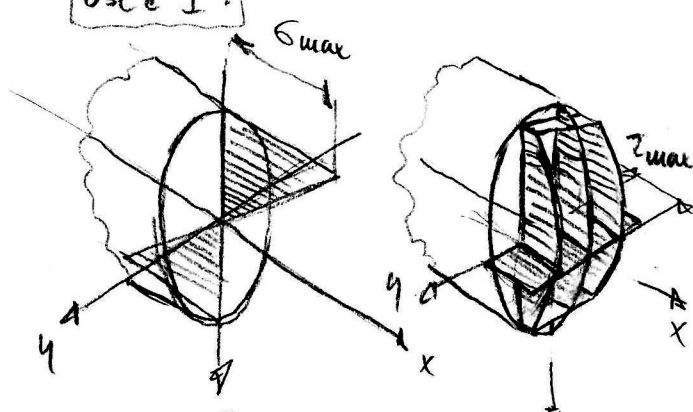


H_k:



2. Řešení

úsek I.

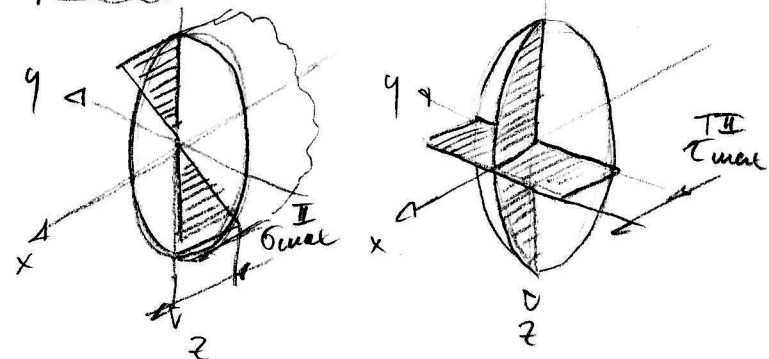


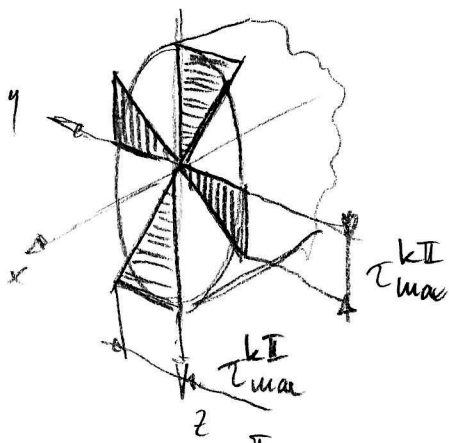
$$\sigma_{max}^I = \frac{H_{max}^I}{W_0} = \frac{F \cdot a}{\frac{\pi \cdot d^3}{32}} = \frac{32 F \cdot a}{\pi d^3}$$

$$\tau_{max}^I = \frac{4}{3} \frac{T_{max}}{S} = \frac{4}{3} \frac{F}{\frac{\pi d^2}{4}} = \frac{16}{3} \frac{F}{\pi d^2}$$

$$k^I = \min \left\{ \frac{\sigma_k}{\sigma_{max}^I}, \frac{\sigma_k}{2 \tau_{max}^I} \right\}$$

úsek II

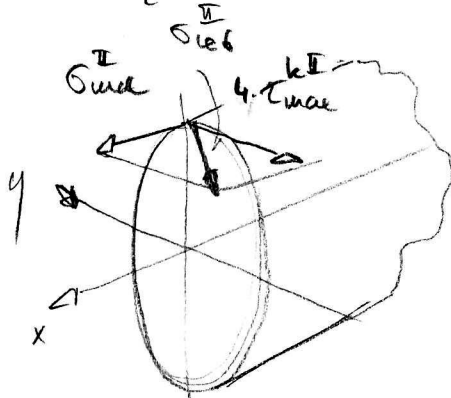




$$\sigma_{max}^{II} = \frac{M_{max}}{W_o} = \frac{F \cdot a}{\frac{\pi d^3}{32}} = \frac{32 \cdot F \cdot a}{\pi d^3}$$

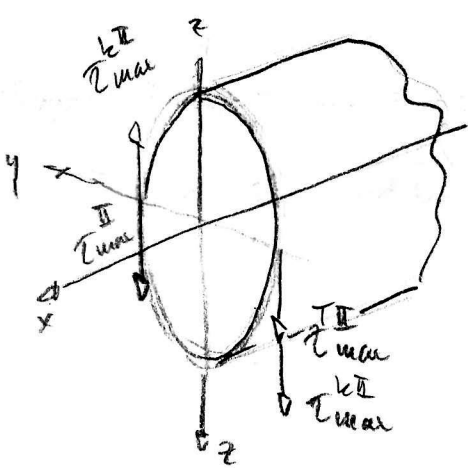
$$\tau_{max}^{II} = \frac{4}{3} \frac{T_{max}}{S} = \frac{4}{3} \frac{F}{\frac{\pi d^3}{4}} = \frac{16 F}{3 \pi d^3}$$

$$\tau_{max}^{kII} = \frac{M_{kmax}}{W_k} = \frac{F \cdot a}{\frac{\pi d^3}{16}} = \frac{16 F \cdot a}{\pi d^3}$$



$$\sigma_{red}^{II} = \sqrt{\sigma_{max}^{II^2} + 3 \tau_{max}^{kII^2}} = \dots$$

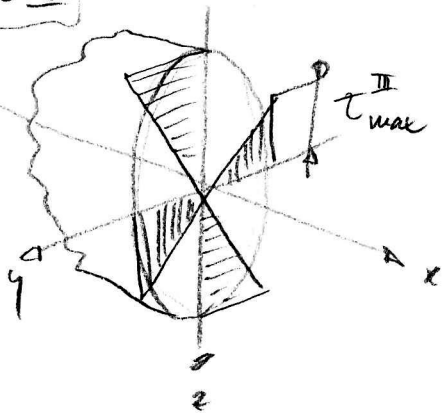
$$\sigma_{red}^{II} = \sqrt{\sigma_{max}^{II^2} + 4 \tau_{max}^{kII^2}} = \dots$$



$$\tau_{max}^{II} = \tau_{max}^{II} + \tau_{max}^{kII} = \frac{4}{3} \frac{F}{\frac{\pi d^3}{4}} + \frac{F \cdot a}{\frac{\pi d^3}{16}} = \frac{16 F}{3 \pi d^3} + \frac{16 F \cdot a}{\pi d^3}$$

$$k = \min \left\{ \frac{\sigma_k}{\sigma_{red}^{II}}, \frac{\sigma_k}{2 \tau_{max}^{II}} \right\}$$

use k III



$$\tau_{max}^{III} = \frac{M_k}{W_k} = \frac{2 F \cdot a}{\frac{\pi d^3}{16}} = \frac{32 F \cdot a}{\pi d^3}$$

$$k = \frac{\sigma_k}{2 \tau_{max}^{III}}$$