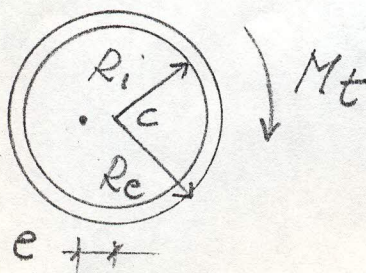


3 Verificare la seguente sezione circolare cava con $R_e=20\text{cm}$, $R_i=19\text{cm}$, $N=-20000\text{Kg}$, $e=5\text{cm}$, $M_t=1000\text{Kgm}$.



$$= -163,2358 \pm 4,29 \text{ y}$$

$$\sigma_{2\max} = -163,2358 - 4,29 \cdot 20 = -249 \text{ kg/cm}^2$$

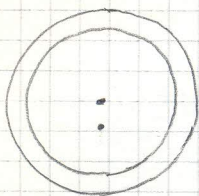
$$\Omega = \pi \cdot 19,5^2 = 1194,59 \text{ cm}^2 \quad S = 1 \text{ cm.}$$

$$\tau = \frac{M_t}{2\Omega_s} = \frac{100000}{2 \cdot 119,459} \approx 41,85 \text{ kg/cm}^2$$

$$\begin{aligned} |\sigma_{id}| &= \sqrt{\sigma_z^2 + 3\tau^2} = \sqrt{249^2 + 3 \cdot 41,85^2} = \sqrt{67256} = \\ &= 259 \text{ kg/cm}^2 < \sigma_{all}. \end{aligned}$$

$$3) A = \pi (R_e^2 - R_i^2) = 122,5221 \text{ cm}^2$$

$$I = \frac{\pi}{4} (R_e^4 - R_i^4) = 23309 \text{ cm}^4$$



$$\sigma_z = - \frac{20000}{122,5221} \pm \frac{20000 \cdot 5}{23309} y =$$