

Esercizio 3.18

Calcolo le quantità legate alla sezione.

$$W_{xx} = W_{yy} = \frac{\pi}{32} l^3 [1 - \alpha^4]$$

$$W_P = \frac{\pi}{16} l^3 [1 - \alpha^4]$$

$$A = \frac{\pi}{4} l^2 (1 - \alpha^2)$$

Nota che la forza αF non genera N e quindi nemmeno σ_N .

Non a caso non viene richiesto σ_N nel compito.

Calcolo M_{fxx} , M_{fyy} e le varie σ_f .

$$|M_{fxx}| = F \cdot \alpha \cdot \lambda l$$

$$|M_{fyy}| = 0$$

$$\sigma_{fA} = - \frac{F \cdot \alpha \cdot \lambda \cdot l}{W_{xx}} ; \sigma_{fB} = 0$$

Calcolo T e le varie τ_T .

$$|T| = F \cdot \alpha$$

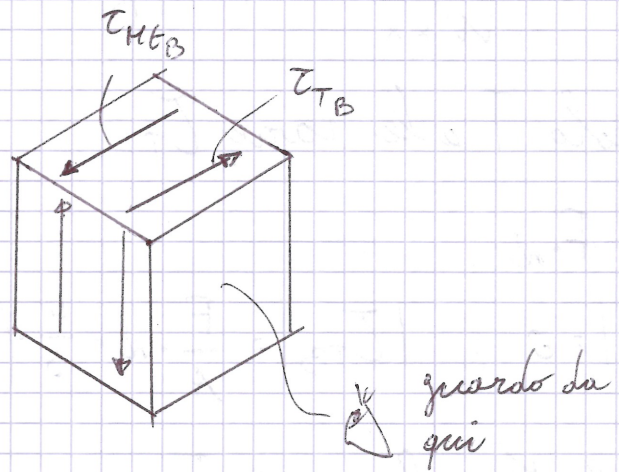
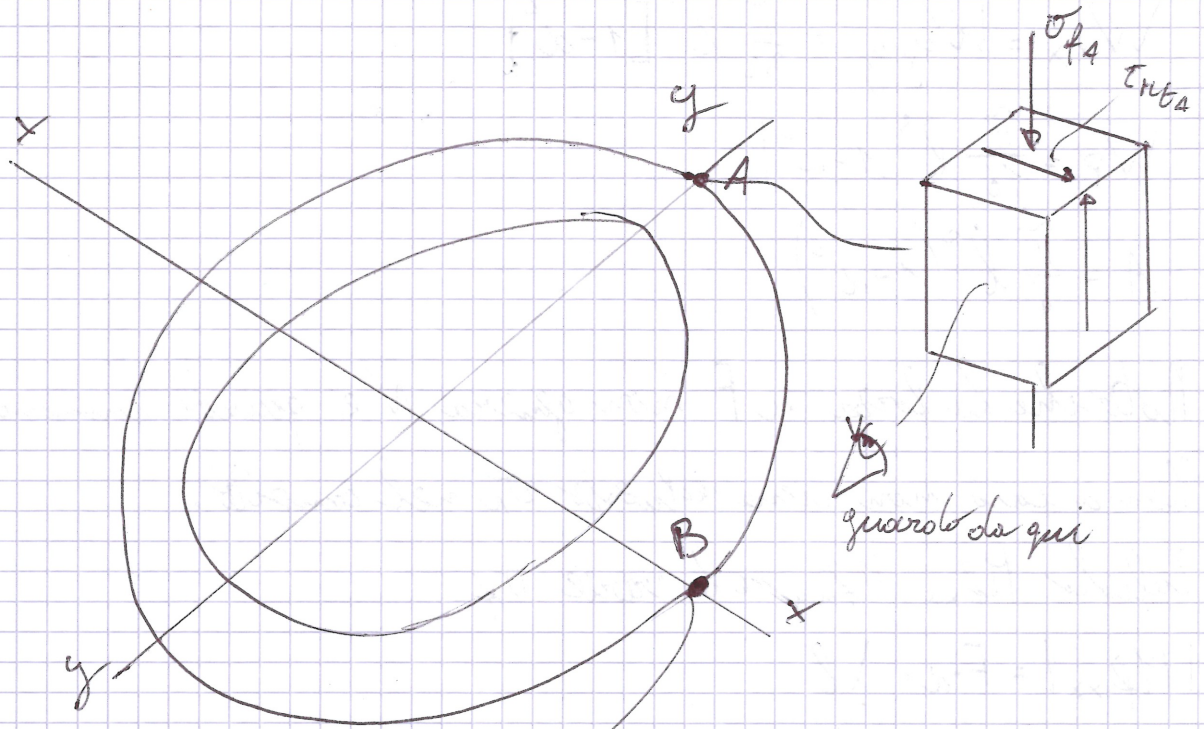
$$|\tau_{TA}| = 0 ; |\tau_{TB}| = \frac{F}{A} \cdot \alpha \cdot \frac{4}{3} \cdot \left(1 + \frac{1}{\alpha + \frac{1}{\alpha}}\right)$$

Calcolo M_t e le varie τ_{Mt} .

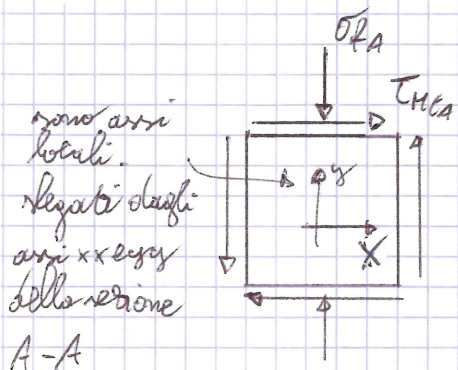
$$|M_t| = F \cdot \alpha \cdot l$$

$$|\tau_{MtA}| = |\tau_{MtB}| = \frac{F \cdot \alpha \cdot l}{W_P}$$

Disegnare i cubetti elementari:

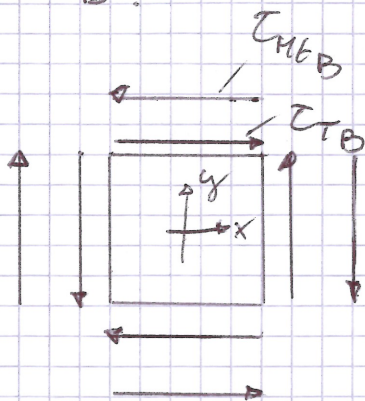


Punto A.



$$\sigma_{1,2} = \frac{\sigma_A + 0}{2} \pm \sqrt{\left(\frac{\sigma_A - 0}{2}\right)^2 + (\tau_A)^2}$$

Part B.



$$\sigma_{1-2B} = \frac{0+0}{2} \pm \sqrt{\left(\frac{0-0}{2}\right)^2 + \left(\tau_{H.T.B} - \tau_{T.B}\right)^2}$$