

Esercizio 3.19

Calcolo le quantità legate alla sezione:

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

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

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

Calcolo lo sforzo normale e σ_N .

$$N_{A-A} = F \quad (\text{trattivo})$$

$$\sigma_{N_A} = \sigma_{N_B} = \frac{F}{A}$$

Calcolo il momento flettente e σ_F .

$$|M_{f_{x-x}}| = |F \cdot l - \alpha F \cdot \lambda l|$$

$$\sigma_{f_A} = \frac{+F \cdot l - \alpha F \cdot \lambda l}{W}$$

trattivo compressivo

il segno di σ_{f_A} dipende dallo specifico α e λ

$$M_{f_{y-y}} = 0 \rightarrow \sigma_{f_B} = 0$$

Calcolo M_t e τ_{Mt}

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

$$|\tau_{Mt_A}| = |\tau_{Mt_B}| = \frac{\alpha F \cdot l}{W_p}$$

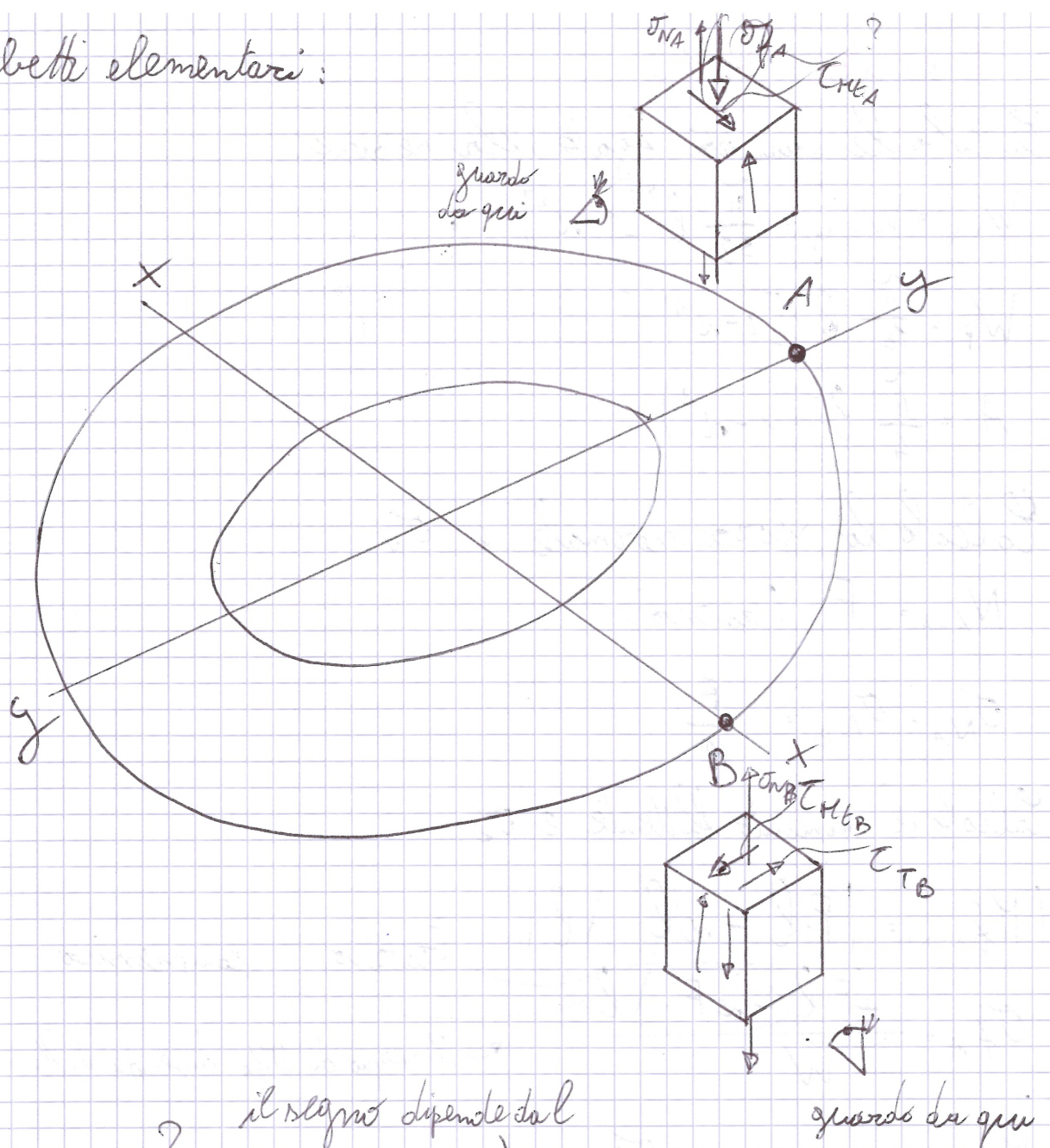
Calcolo T e τ_T .

$$T = \alpha F$$

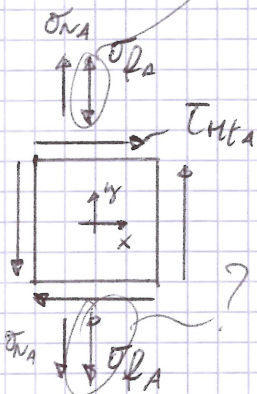
$$\tau_{TA} = 0$$

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

Disegno i cubetti elementari:



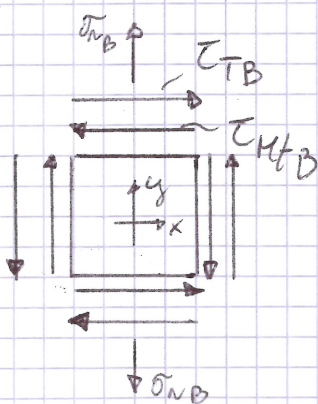
Punto A.



il segno dipende dal
proprio σ e λ

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

Punto B.



$$\sigma_{1-2B} = \frac{\sigma_B}{2} \pm \sqrt{\left(\frac{\sigma_B}{2}\right)^2 + (|\tau_B| - |\tau_B|)^2}$$