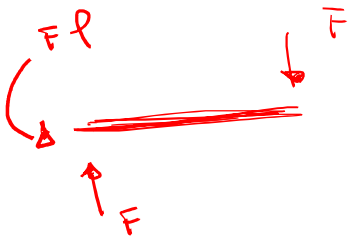
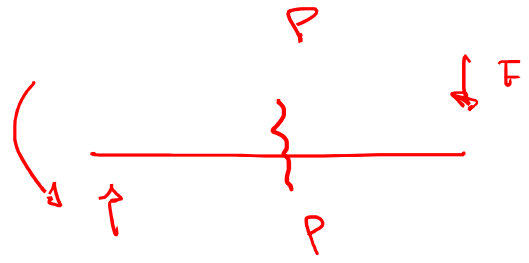
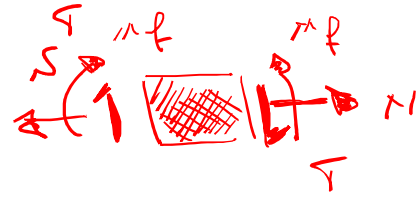
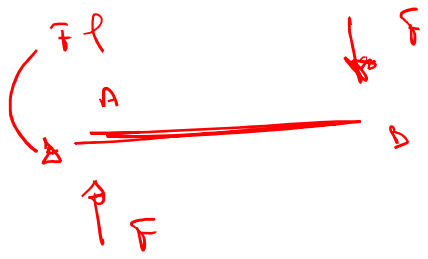


$$x: R_x^A = 0$$

$$y: R_y^A = F$$

$$\circlearrowleft_A: -F l + M^A = 0 \Rightarrow M^A = F l$$

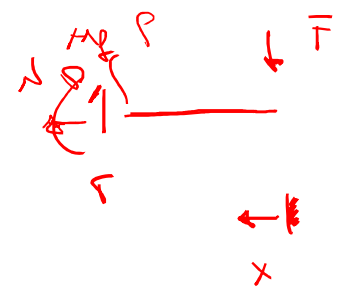


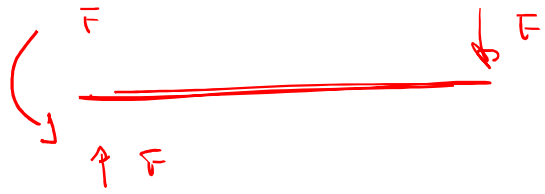


$N: N = 0$

$T: T = F$

$M_p: -Fx = M$

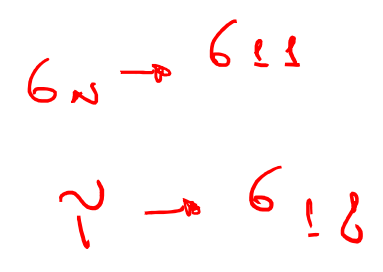
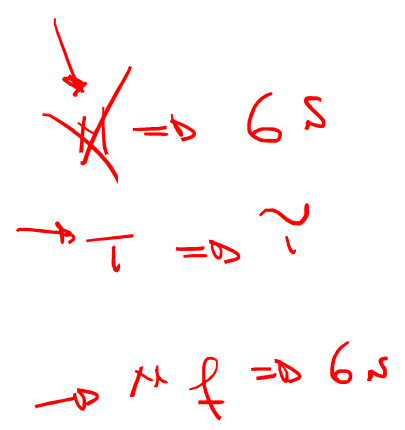
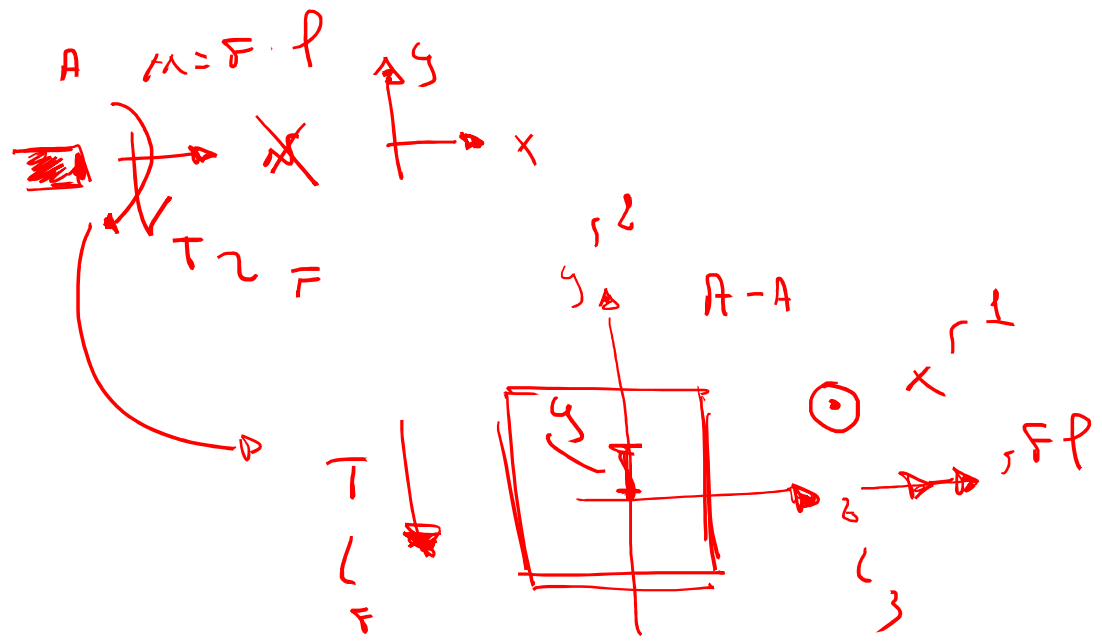




[M]

$M = -F \cdot x$



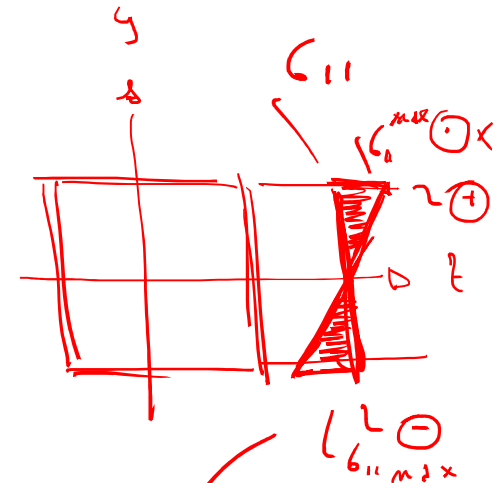
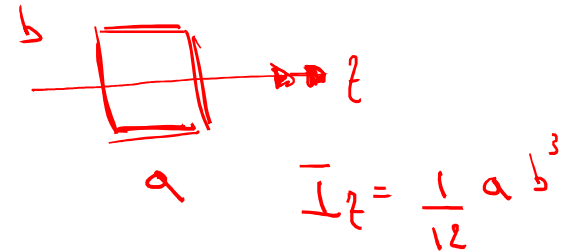


$\sigma_x \rightarrow \sigma_{zz}$  (TENSÕES: normais)

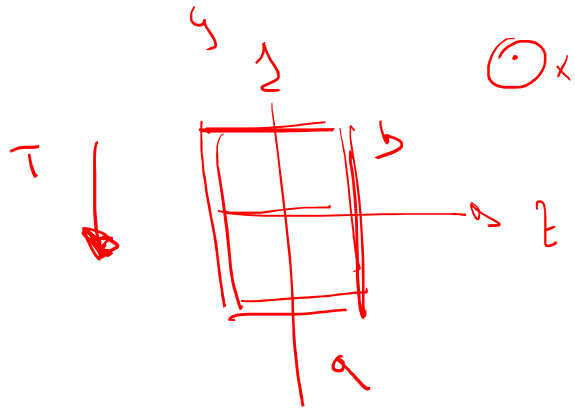
$$M_x = \bar{r} \cdot P$$

$$\Rightarrow \sigma_{zz} = \frac{M_x y}{I_{\square}}$$

$$\sigma_{zz}(M_x) = \frac{F \cdot P}{a \cdot b^3} \cdot y$$

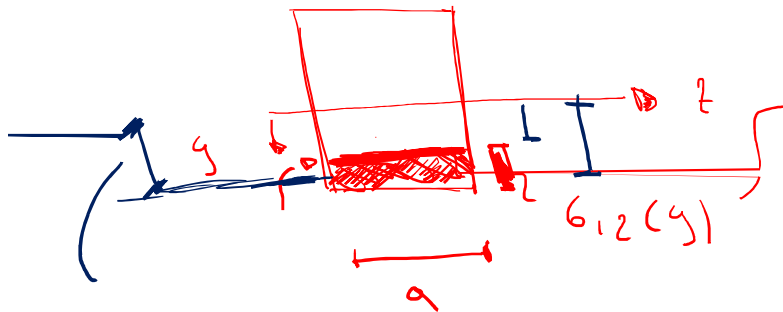


$$\left( \frac{F \cdot P}{a \cdot b^2} \cdot b \right)$$



$$T \Rightarrow \sigma_{yz}$$

$$\sigma_{yz} = \frac{T \cdot S_z'(y)}{I_z \cdot \cos \alpha}$$



$$y_{\text{bar: cons. fo}} = \left( y + \frac{b}{2} \right) \frac{t}{2}$$

$$T = \bar{T}$$

$$I_z = \frac{1}{12} a b^3$$

$$\cos \alpha = a$$

$$S_z'(y) = \text{AREA} \left( \text{SOFO SE TROVA E} \right) y$$

baricentro  
SOFO SE TROVA E

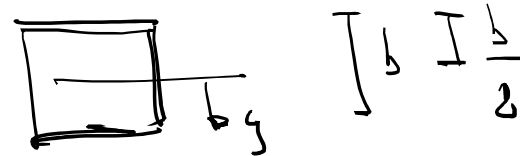
$$S_z'(y) = \frac{a}{2} \left( \frac{b}{2} - y \right) \left( \frac{b}{2} + y \right)$$

$$G_{12} = \frac{\frac{F}{2} \left( \frac{b}{2} - y \right) \left( \frac{b}{2} + y \right)}{\frac{1}{12} a b^3 \cdot \cancel{a}}$$

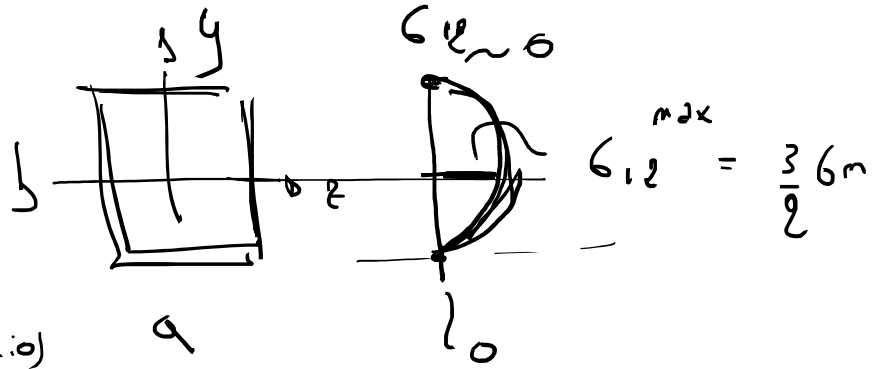
$$G_{12} = \frac{12F}{2 a b^3} \left( \frac{b^2}{4} - y^2 \right) = \frac{6F}{a b^3} b^2 \left( \frac{1}{4} - \left( \frac{y}{b} \right)^2 \right)$$

$$= \frac{3F}{a b^3} b^2 \left( 1 - \left( \frac{y}{b/2} \right)^2 \right)$$

$$= \frac{3}{2} \frac{F}{a b} \left( 1 - \xi^2 \right); \quad \xi = \left( \frac{y}{b/2} \right)$$



$$\sigma_{12} = \frac{3}{2} \sigma_m \left( \frac{1}{2} - \xi^2 \right)$$



TENSIONI: TANGENZIALI (TAGLIO)

