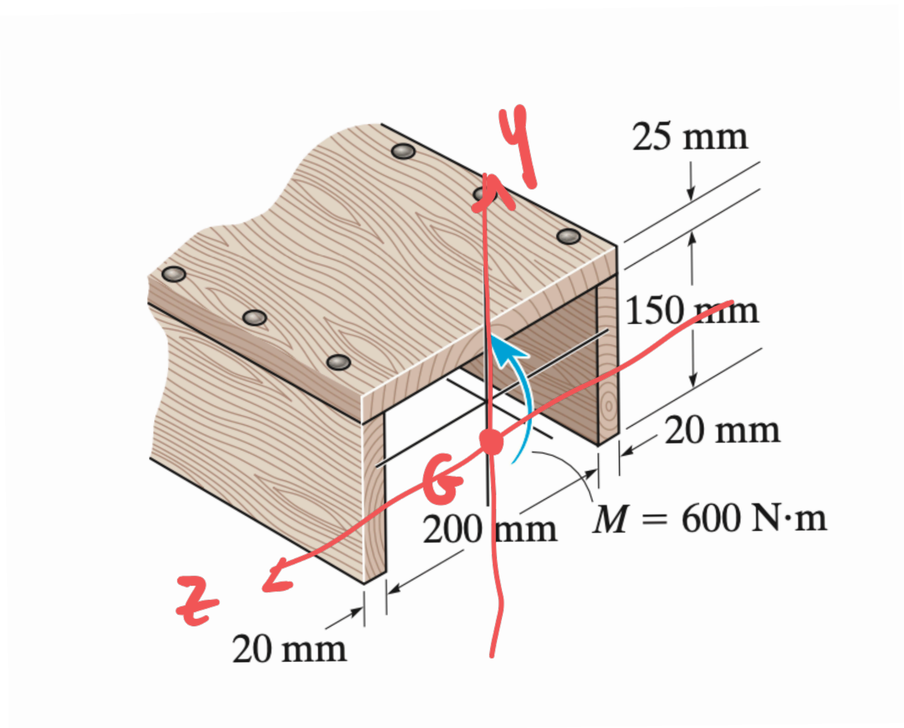
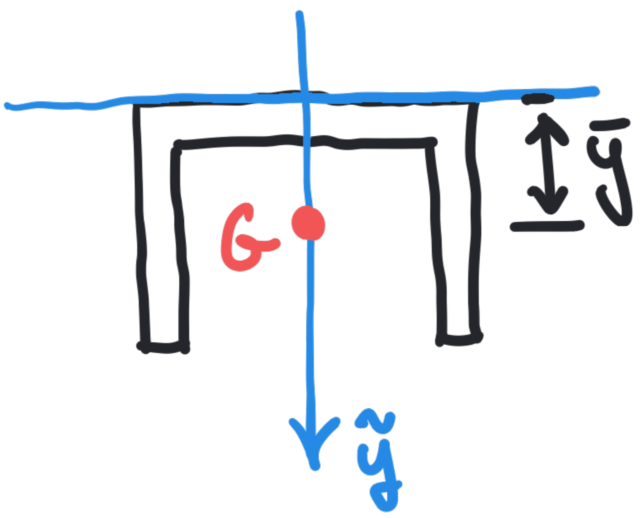
Determinare σ_{max}

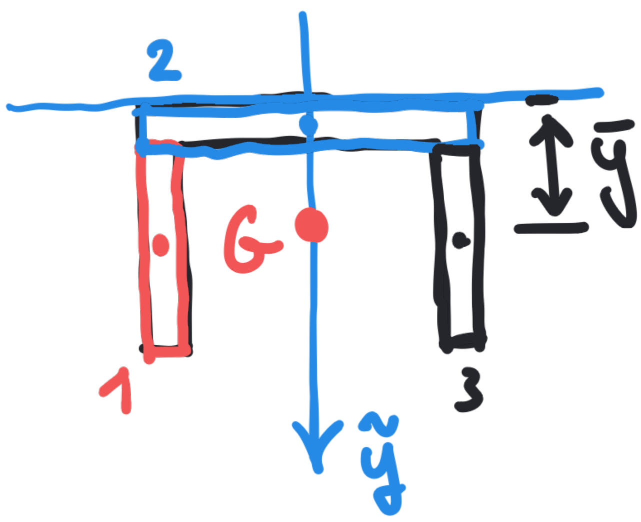


$$\sigma = -\frac{M}{I}\, y$$

$$I = \int_A y^2 \, dA$$

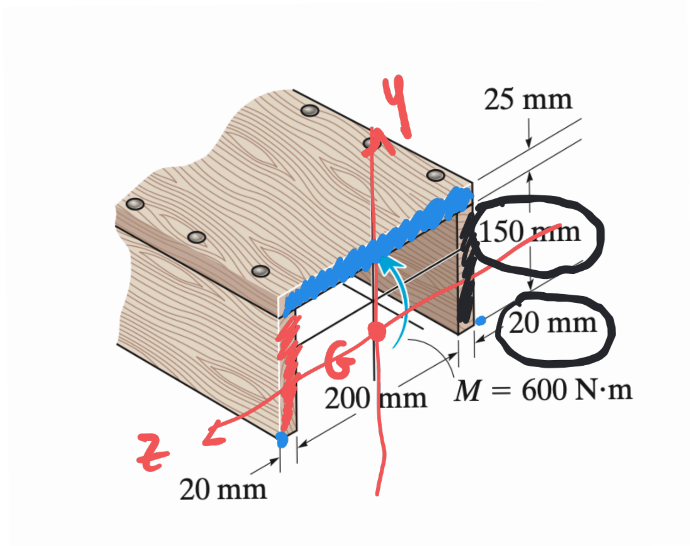
Gli assi z e y devono essere baricentrici:
Occorre individuare il baricentro della sezione.





$$\bar{y} = \frac{1}{A}\int_A \tilde{y}\, dA$$

Determinare σ_{max}

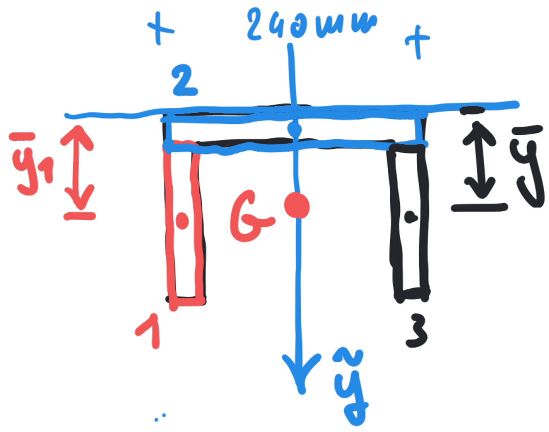


$$\sigma = -\frac{M}{I} y$$

$$I = \int_A y^2 dA$$

Gli assi z e y devono essere baricentrici:

Occorre individuare il baricentro della sezione.

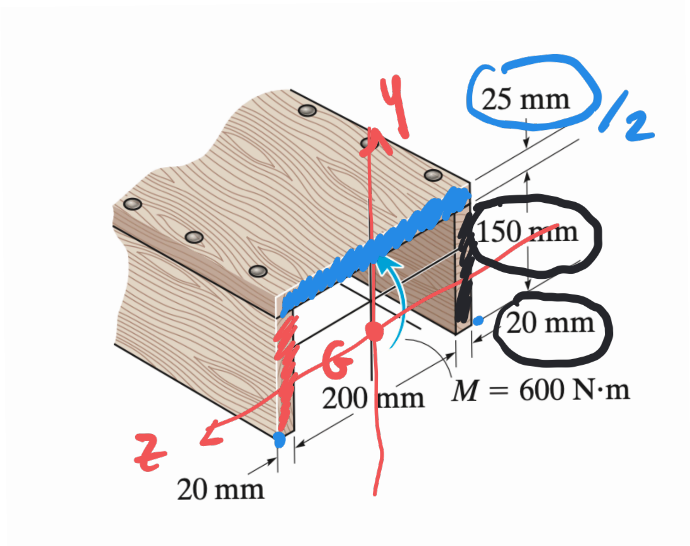


$$\bar{y} = \frac{}{0.24\,(0.025) + 2(0.15)(0.02)}$$

$$\bar{y} = \frac{1}{A}\int_A \tilde{y}\, dA$$

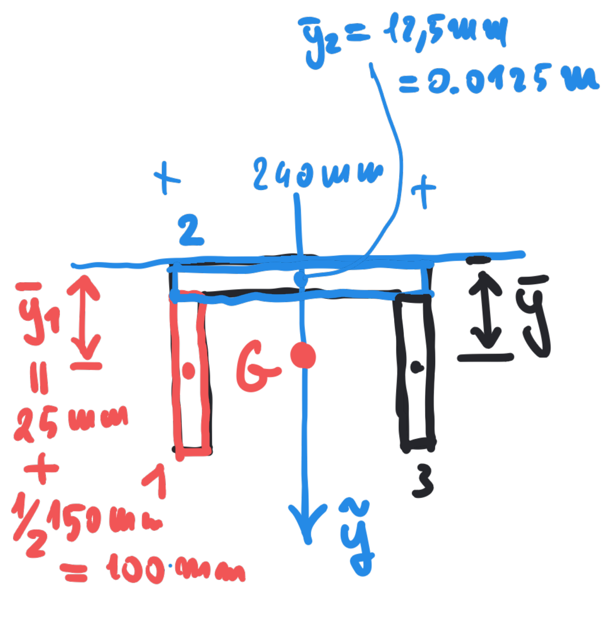
$$\bar{y} = \frac{1}{A}\left(\bar{y}_1 A_1 + \bar{y}_2 A_2 + \bar{y}_3 A_3\right)$$

Determinare σ_{max}



$$\sigma = -\frac{M}{I} y \qquad \bar{y} = 0.05625 \text{ m}$$

$$I = \int_A y^2 dA$$

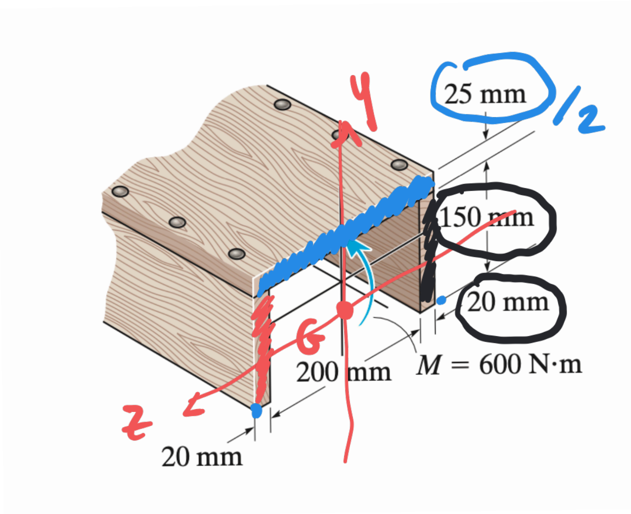


$$\bar{y} = \frac{(0.0125)(0.24)(0.025) + 2 \cdot (0.1)(0.15)(0.02)}{0.24(0.025) + 2(0.15)(0.02)}$$

$$\bar{y} = \frac{1}{A}\int_A \tilde{y} \, dA$$

$$\bar{y} = \frac{1}{A}(\bar{y}_1 A_1 + \bar{y}_2 A_2 + \bar{y}_3 A_3)$$

Determinare σ_{max}

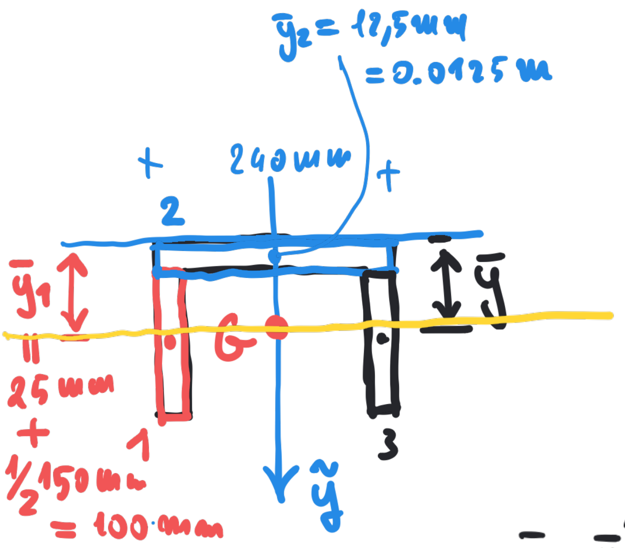


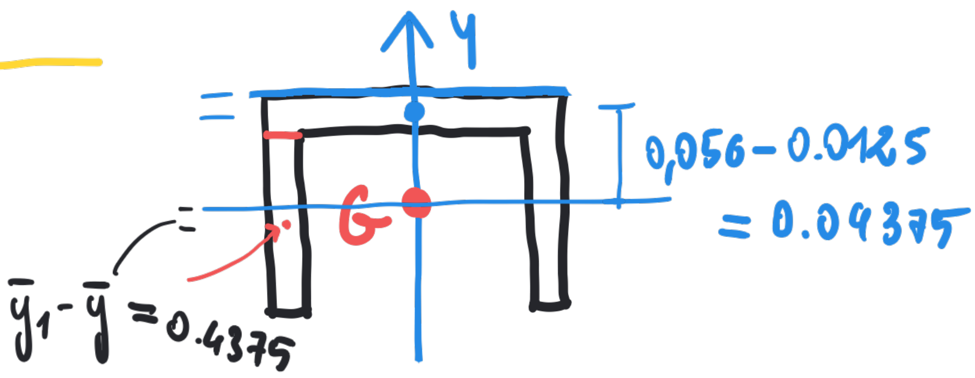
$$\sigma = -\frac{M}{I} y \qquad \bar{y} = 0.05625\,m$$

$$I = \int_A y^2 dA = I_1 + I_2 + I_3$$

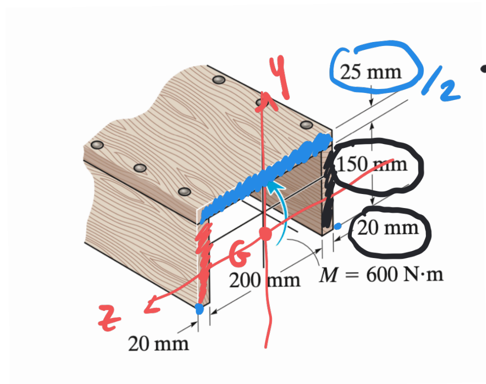
$$I_2 = \frac{1}{12}(0.24)(0.025^3) + (0.24)(0.025)(0.04375)^2$$

$$I_1 = \frac{1}{12}(0.02)(0.15)^3 + (0.02)(0.15)(0.4375^2)$$





Determinare σ_{max}



$$\boxed{\sigma = -\frac{M}{I} y}$$

$\bar{y} = 0.05625 \, m$

$$I = \int_A y^2 dA = I_1 + I_2 + I_3 = (34.53) \cdot 10^{-6} \, m^4$$

$$I_2 = \frac{1}{12}(0.24)(0.025^3) + (0.24)(0.025)(0.04375)^2$$

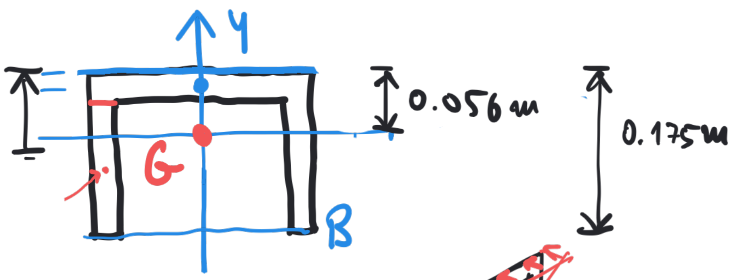
$$I_1 = \frac{1}{12}(0.02)(0.15)^3 + (0.02)(0.15)(0.4375^2)$$

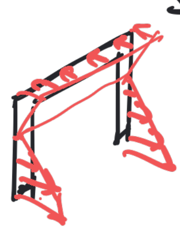
$$I_3 = I_1$$

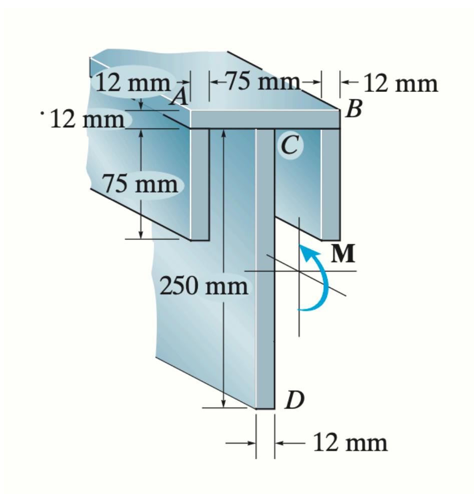
$$y_{max} = \bar{y} = 0.05625$$

$$y_{min} = -(0.175 - 0{,}05625) = -0.11875$$

$$\sigma_{max} = \; = \sigma_B = \frac{-M}{I} y_{min} = 2.06 \, MPa$$

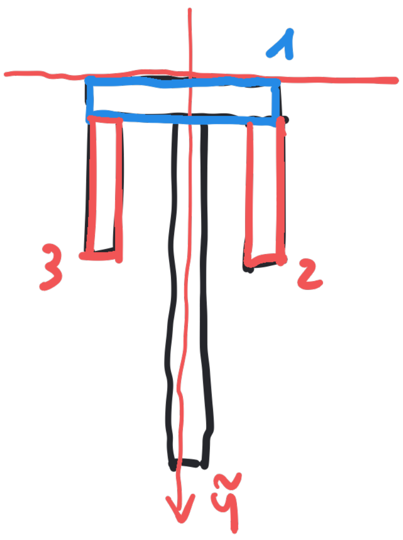


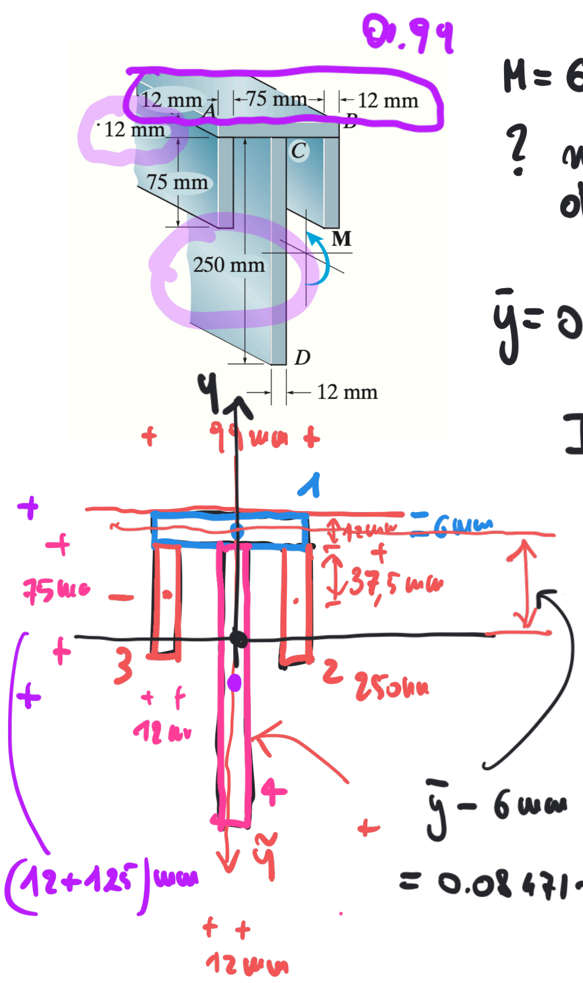




$M = 6\ kN \cdot m$

? massima tensione di trazione e di compressione





$M = 6\ kN \cdot m$

? massima tensione di trazione e di compressione

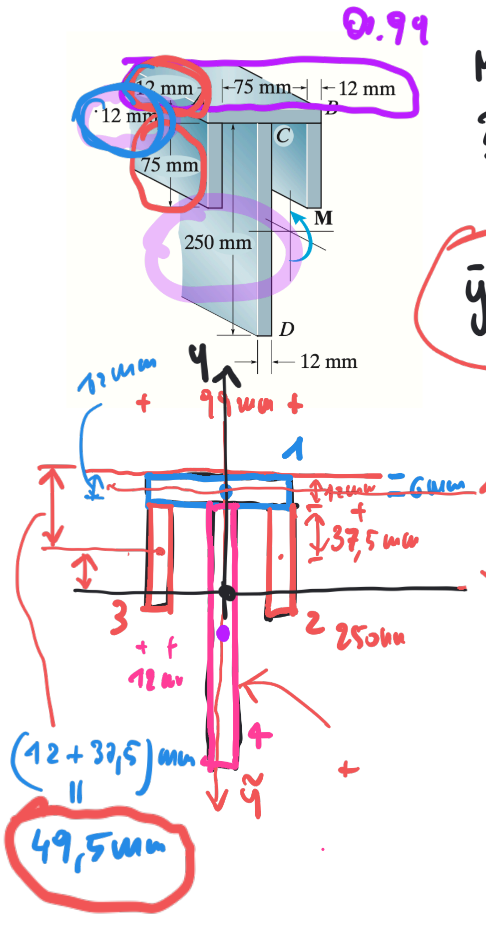
$\bar{y} = 0.08471\ m$

$I = I_1 + I_2 + I_3 + I_4$

$I_1 = \left[\frac{1}{12}(0.099)(0.012^3) + (0.099)(0.012)(0.08471 - 0.006)^2\right] m^4$

$\bar{y} - 6\ mm$

$= 0.08471 - 0.006$



$M = 6\ kN \cdot m$

? massima tensione di trazione e di compressione

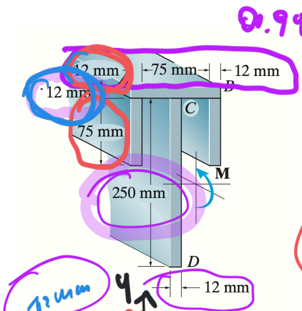
$$\bar{y} = 0.08471\ m$$

$$I = I_1 + I_2 + I_3 + I_4$$

$$I_1 = \left[\frac{1}{12}(0.099)(0.012^3) + (0.099)(0.012)(0.08471 - 0.006)^2\right] m^4$$

$$I_2 = \left[\frac{1}{12}(0.012)(0.075^3) + (0.012)(0.075)(0.08471 - 0.0495)\right] m^4$$

0.99



$M = 6\ kN \cdot m$

? massima tensione di trazione e di compressione

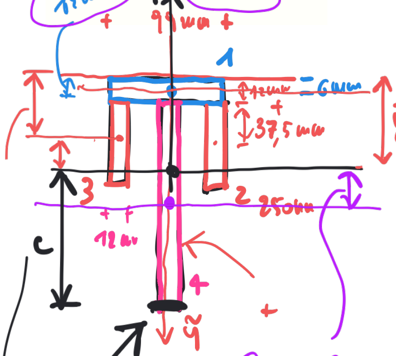
$\bar{y} = 0.08471\ m$

$I = I_1 + I_2 + I_3 + I_4 = 34.2773\ 10^{-6}\ m^4$

$I_1 = \left[\frac{1}{12}(0.099)(0.012^3) + (0.099)(0.012)(0.08471 - 0.006)^2\right] m^4$

$I_2 = \left[\frac{1}{12}(0.012)(0.075^3) + (0.012)(0.075)(0.08471 - 0.0495)\right] m^4$

$I_4 = \frac{1}{12}(0.012)(0.25^3) + (0.012)(0.25)(0.137 - 0.08471)^2$



σ_t max

$\left(12 + \frac{250}{2}\right) mm - \bar{y} = 137 - \bar{y} =$

$c = (250 + 12)\ mm - \bar{y}$

$(\sigma_t)_{max} = \frac{M}{I} c = \frac{(6 \cdot 10^3)(0.262 - 0.08471)}{34.2773 \cdot 10^{-6}} \frac{N}{m^2} = 31 \cdot 10^6\ N/m^2 = 31\ MPa$

$(\sigma_c)_{max} = \frac{M}{I} \bar{y} = \frac{(6 \cdot 10^3)(0.08471)}{34.2773 \cdot 10^{-6}} = 14.83\ 10^6\ N/m^2 = 14.8\ MPa$

positiva