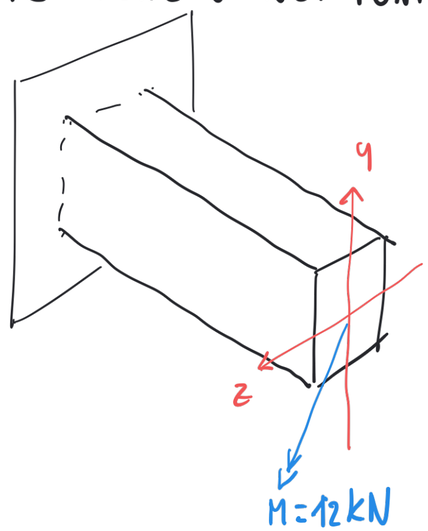
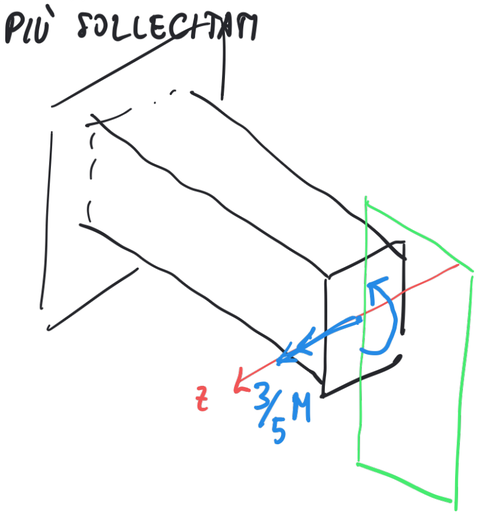
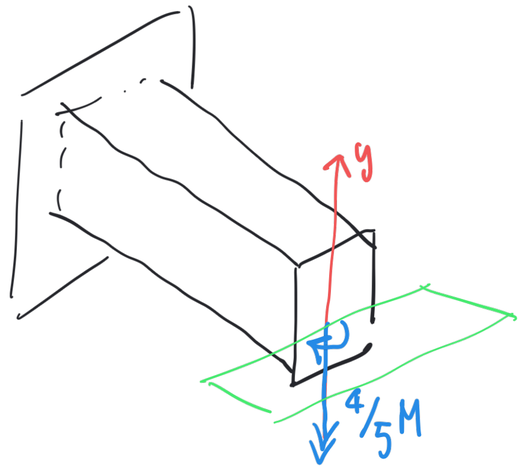
DETERMINARE L'ASSE NEUTRO E LA TENSIONE σ NEI PUNTI PIÙ SOLLECITATI





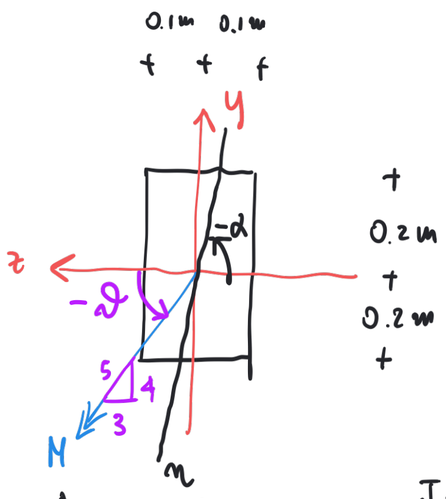


$$M_z = \frac{3}{5}M = \frac{3}{5}\cdot 12\,kN = 7.20\,kN$$

$$M_y = -\frac{4}{5}M = -9.60\,kN$$

$$I_z = \frac{1}{12}(0.2\,m)(0.4\,m)^3 = 1.067(10^{-3})\,m^4$$

$$I_y = \frac{1}{12}(0.4\,m)(0.2\,m)^3 = 0.2667(10^{-3})\,m^4$$

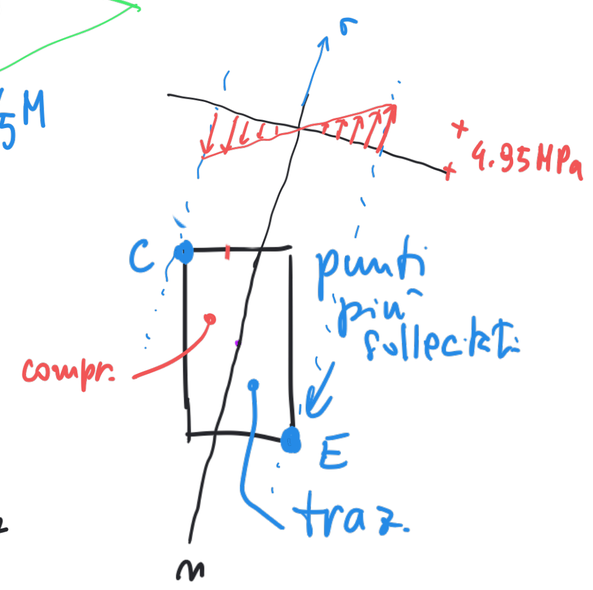


$$\sigma = -\frac{M_z}{I_z}y + \frac{M_y}{I_y}z$$

Asse neutro $\quad y = \frac{I_z}{I_y}(\tan\vartheta)z = -\frac{I_z}{I_y}\frac{4}{3}z \qquad \tan\vartheta = -4/3$

$$\Rightarrow \vartheta = -53.1°$$

$$\tan\alpha = \frac{I_z}{I_y}\tan\vartheta = -\frac{1.067}{0.2667}\cdot\frac{4}{3} \Rightarrow \alpha = -79.4°$$



$$\sigma_C = -\frac{7.20\,kN\cdot 0.2\,m}{1.067\cdot 10^{-3}\,m^4} + \frac{(-9.60\,kN)(0.1\,m)}{0.2667(10^{-3})\,m^4}$$

$$= -4.95\,MPa$$

$$\sigma_E = 4.95\,MPa$$