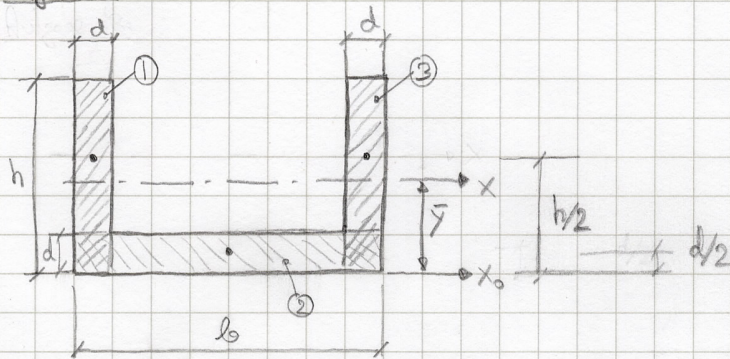


Aufgabe 18:



Schwerpunkt:

$$\bar{y} = \frac{\sum \bar{y}_i A_i}{\sum A_i} = \frac{\bar{y}_1 A_1 + \bar{y}_2 A_2 + \bar{y}_3 A_3}{A_1 + A_2 + A_3} = \frac{\frac{h}{2} \cdot hd + \frac{d}{2} \cdot d(b-2d) + \frac{h}{2} \cdot hd}{hd + d(b-2d) + hd}$$

$$\bar{y} = 91.7 \text{ mm}$$

Flächenträgheitsmoment:

$$I_{xx}^{(1)} = \frac{1}{12} dh^3 + dh \left(\frac{h}{2} - \bar{y} \right)^2 = 7.896 \cdot 10^7 \text{ mm}^4$$

$$I_{xx}^{(2)} = \frac{1}{12} (b-2d) d^3 + d(b-2d) \cdot \left(\bar{y} - \frac{d}{2} \right)^2 = 5.822 \cdot 10^7 \text{ mm}^4$$

$$I_{xx}^{(3)} = \frac{1}{12} dh^3 + dh \left(\frac{h}{2} - \bar{y} \right)^2 = 7.896 \cdot 10^7 \text{ mm}^4$$

$$\underline{I_{xx}^{(g)}} = 2I_{xx}^{(1)} + I_{xx}^{(2)} = 2.16 \cdot 10^8 \text{ mm}^4$$