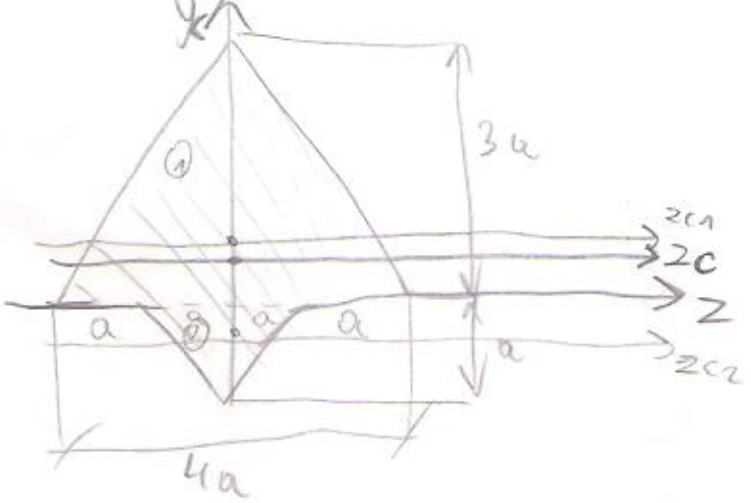

dla trójkąta $y_c = \frac{h}{3}$

$A_1 = 2a \cdot 3a = 6a^2$ $\quad y_{c1} = a$ $\quad z_{c1} = 0$

$A_2 = a \cdot a = a^2$ $\quad y_{c2} = -\frac{1}{3}a$ $\quad z_{c2} = 0$

$$y_c = \frac{\sum A_i \cdot y_i}{\sum A_i} = \frac{6a^2 \cdot a + a^2 \cdot (-\frac{1}{3}a)}{6a^2 + a^2} = \frac{6a^3 - \frac{1}{3}a^3}{7a^2} = \frac{5\frac{2}{3}}{7}a = 0{,}8a$$

$$I_z = I_z^{①} + I_z^{②}$$

$$I_z = \frac{4a \cdot (3a)^3}{12} + \frac{2a \cdot a^3}{12}$$

$$I_z = \frac{4 \cdot 27a^4}{12} + \frac{2a^4}{12} = \frac{108a^4 + 2a^4}{12} = \frac{110a^4}{12} = 9{,}2a^4$$

$$I_z = I_{zc} + d^2 \cdot A$$

$d = 0{,}8a$

$$I_{zc} = I_z - d^2 \cdot A$$

$$I_{zc} = 9{,}2a^4 - (0{,}8a)^2 \cdot 7a^2$$

$$I_{zc} = 9{,}2a^4 - 4{,}48a^4 = 4{,}7a^4$$

$$I_{zc} = 4{,}7a^4$$

$$I_{yc} = I_{yc}^{①} + I_{yc}^{②}$$

$$I_{yc} = 2 \cdot \left(\frac{3a \cdot (2a)^3}{12}\right) + 2 \cdot \left(\frac{a \cdot a^3}{12}\right)$$

$$I_{yc} = 2 \cdot \left(\frac{24a^4}{12} + \frac{a^4}{12}\right)$$

$$I_{yc} = 2 \cdot \left(\frac{25a^4}{12}\right)$$

$$I_{yc} = 4{,}2a^4$$

$$I_0 = I_{yc} + I_{zc} = 4{,}7a^4 + 4{,}2a^4 = 8{,}9a^4$$

$$\underline{I_0 = 8{,}9a^4}$$