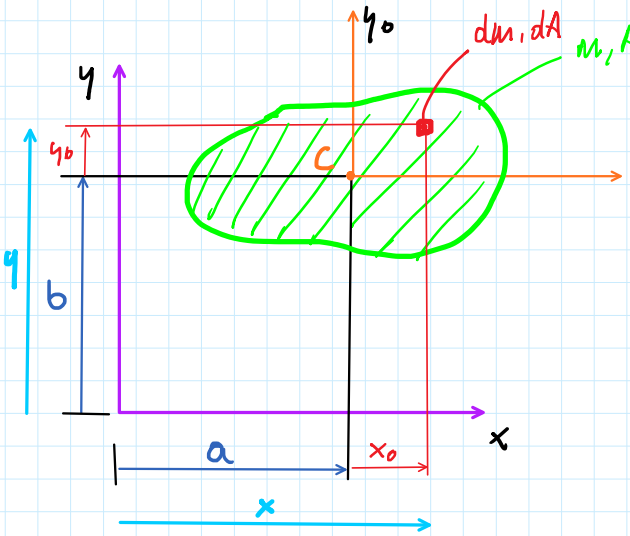
TW. STEINERA (O OSIACH RÓWNOLEGŁYCH)



OŚ CENTRALNA

$x = a + x_0 \qquad y = b + y_0$

$$J_x = \int_m y^2\,dm \qquad J_y = \int_m x^2\,dm$$

$$J_x = \int_m (b+y_0)^2\,dm = \int_m (b^2 + 2by_0 + y_0^2)\,dm =$$

$$= \int_m b^2\,dm + 2\int_m by_0\,dm + \int_m y_0^2\,dm =$$

$$= b^2\int_m dm + 2b\int_m y_0\,dm + \int_m y_0^2\,dm =$$

$$= b^2 \cdot m + 2b \cdot S_{x_0} + J_{x_0}$$

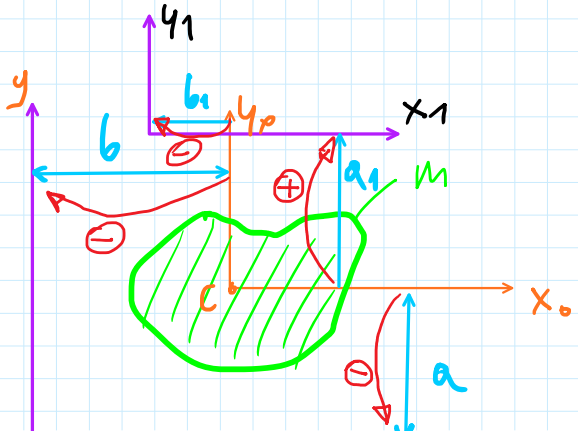
$$J_x = b^2 m + 2b \cdot S_{x_0} + J_{x_0}$$

$$\boxed{J_x = J_{x_0} + mb^2} \quad \Rightarrow \quad \boxed{J_{x_0} = J_x - mb^2}$$

MOMENT DLA OSI DOWOLNEJ (RÓWNOLEGŁA DO CENTRALNEJ)

MOMENT DLA OSI CENTRALNEJ

TW. STEINERA DLA MOMENTÓW DEWIACJI

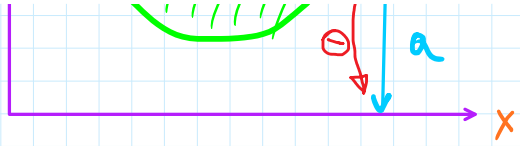


Z DOKŁADNOŚCIĄ DO ZNAKU

$$D_{xy} = D_{x_0y_0} + m\,ab$$

$$D_{xy} = D_{x_0y_0} + m \cdot (-a) \cdot (-b)$$

$$D_{x_1y_1} = D_{x_0y_0} + m \cdot (+a_1) \cdot (-b_1)$$



MOMENTY GEOMETRYCZNE

↕

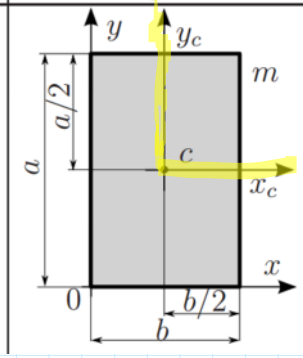
MOMENTY MASOWE

$m = \rho \cdot A$

$J_{xc} = \frac{m a^2}{12}$

$J_{xc} = \rho \cdot \frac{ab \cdot a^2}{12} = \frac{ba^3}{12}$

$D_{x_1 y_1} = D_{x_0 y_0} + m \cdot (+a_1) \cdot (-b_1)$

Lp.	Figura	Wartości
T.1		$J_{x_c} = \frac{ma^2}{12}$ $J_{y_c} = \frac{mb^2}{12}$ $J_x = \frac{ma^2}{3}$ $J_y = \frac{mb^2}{3}$ $D_{xy} = \frac{mab}{4}$ $D_{x_c y_c} = 0$