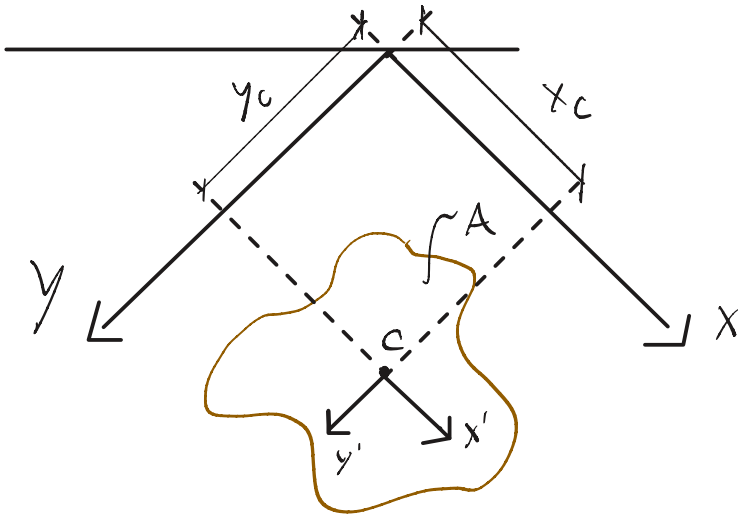


Parallel axis theorem



$$X' = X - x_c$$

$$Y' = Y - y_c$$

MOMENT OF INERTIA
with respect to y

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

$$= \int_A (y' + y_c)^2 dA$$

$$= \int_A y_c^2 + 2y_c \int y' dA + \int_A y'^2 dA$$

$$= y_c^2 A + I_{x_c}$$

definition of MOMENT OF
INERTIA in $x'-y'$ system
centered in C !

PRODUCT MOMENT OF
INERTIA with respect to
 x and y

$$I_{xy} = \int_A xy dA$$

$$= \int_A (x' + x_c)(y' + y_c) dA$$

$$= \int_A (x'y' + x'y_c + x_c y' + x_c y_c) dA$$

$$= I_{x'y'_c} + y_c \int_A x' dA + x_c \int_A y' dA + x_c y_c A$$

$$= I_{x'y'_c} + x_c y_c A$$