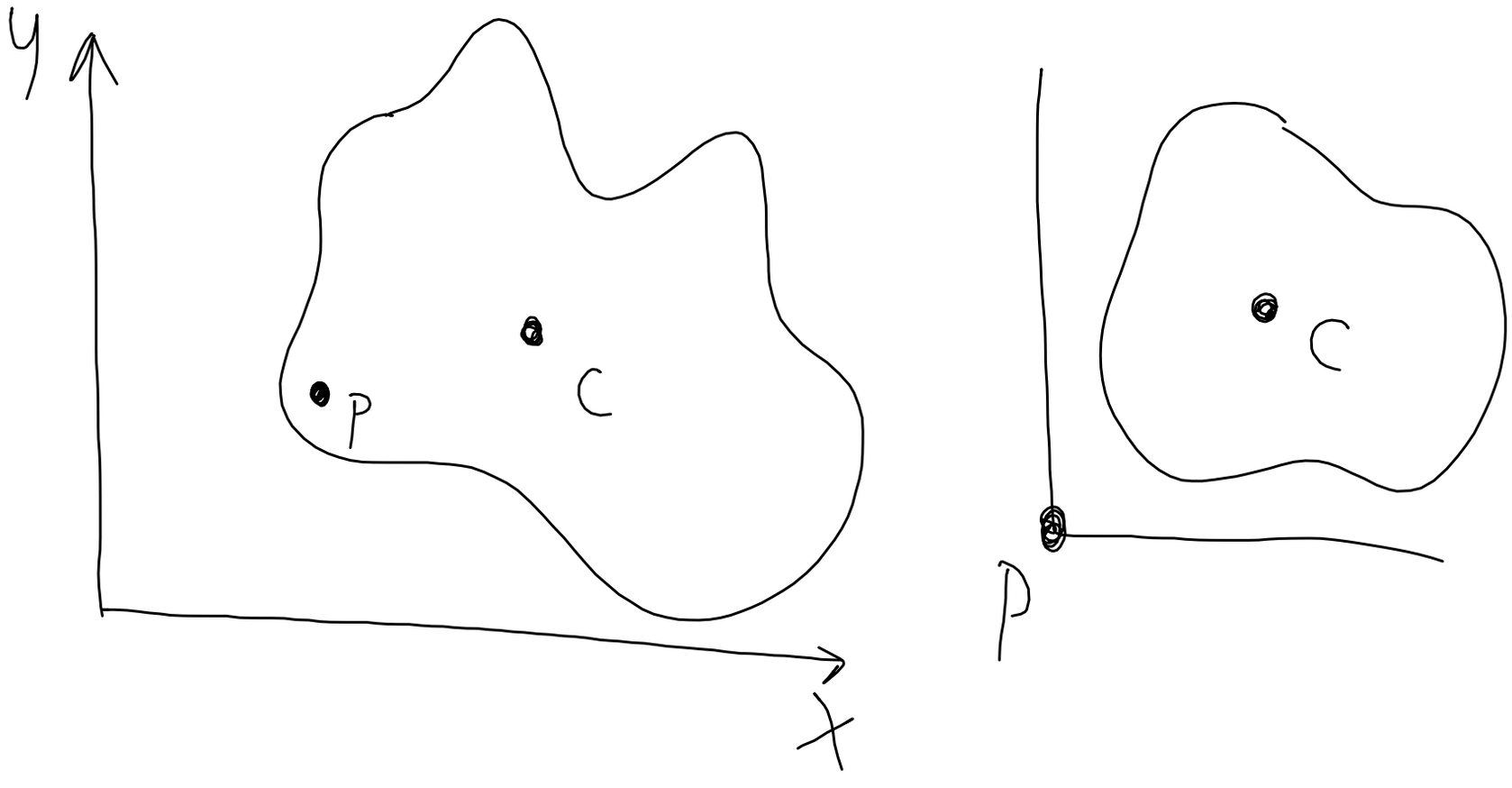
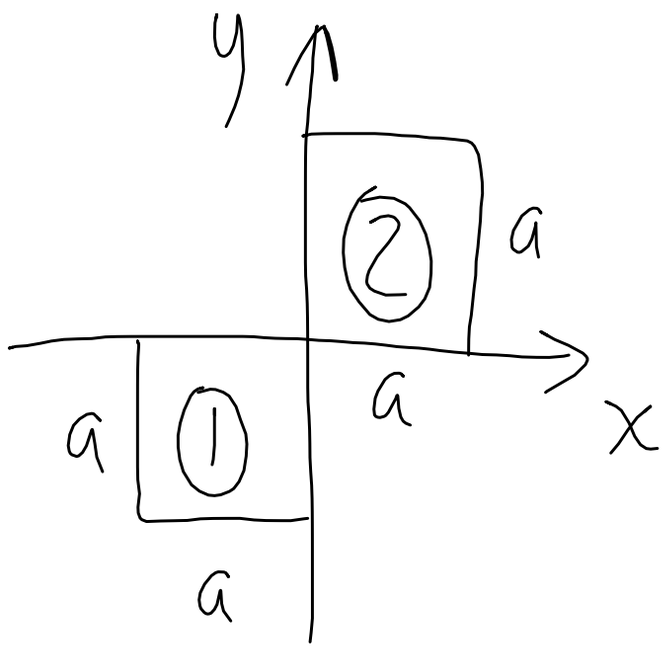
$$I_{xy} = \int xy \, dA \quad \text{Product moment of inertia}$$

$$I_{xy,P} = \bar{I}_{xy,c} + A \bar{x} \bar{y}$$





$$I_{xy} = \int xy \, dA$$

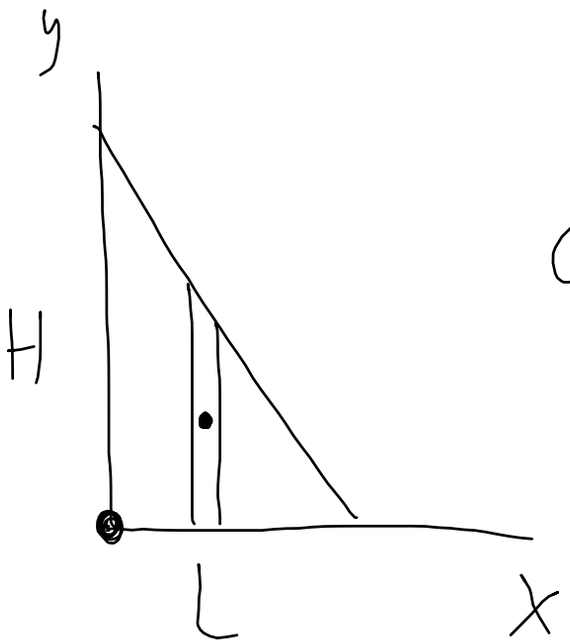
$$= \iint xy \, dx \, dy$$

① $$\int_{-a}^{0}\int_{-a}^{0} xy \, dx\,dy = \int_{-a}^{0} x \left.\frac{y^2}{2}\right|_{-a}^{0} dx$$

② Same as ① $$= -\frac{a^2}{2}\int_{-a}^{0} x\,dx = -\frac{a^2}{2}\left.\frac{x^2}{2}\right|_{-a}^{0} = \frac{a^4}{4}$$

$$\therefore I_{xy} = \frac{a^4}{2}$$

Set up next problem



$$dI_{xy,p} = \cancel{dI_{xy,c}}^{0} + dA\,\bar{x}\,\bar{y}$$

x

$\bar{y} = y/2$

$y = -\frac{H}{L}x + H$