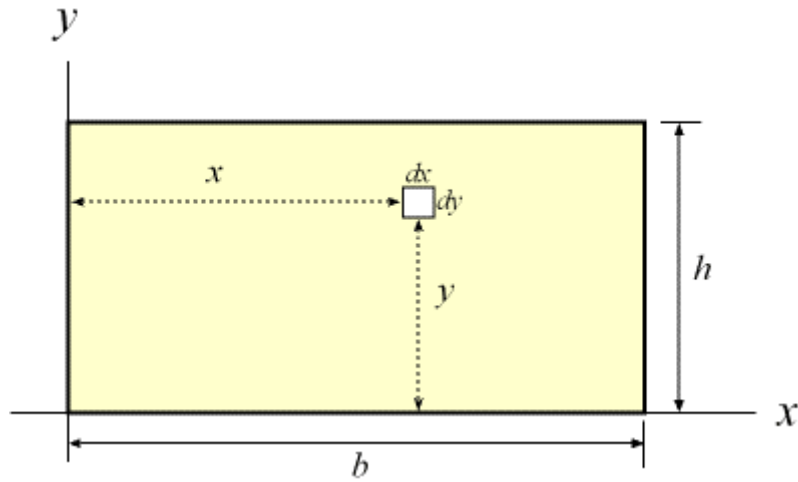


## AREA MOMENT OF INERTIA

### Problem 1:

Find the moment of inertia about the  $x$  axis and also  $y$  axis of the following figure:



Calculating  $I_x$ :

$$I_x = \int y^2 dA$$
$$dA = dx dy$$
$$I_x = \int_{y=0}^h \int_{x=0}^b y^2 dx dy = \frac{by^3}{3} \Big|_{y=0}^{y=h} = \frac{bh^3}{3}$$

Calculating  $I_y$ :

$$I_y = \int x^2 dA$$
$$dA = dx dy$$
$$I_y = \int_{x=0}^b \int_{y=0}^h x^2 dy dx = \frac{hx^3}{3} \Big|_{x=0}^{x=b} = \frac{hb^3}{3}$$