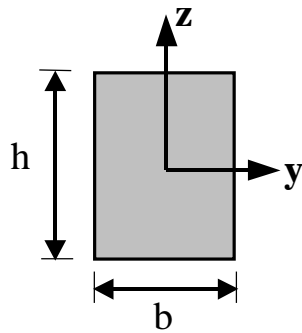


16.20 HANDOUT #4A
Fall, 2002
Common Sections with Principal Axes
and their Moments of Inertia

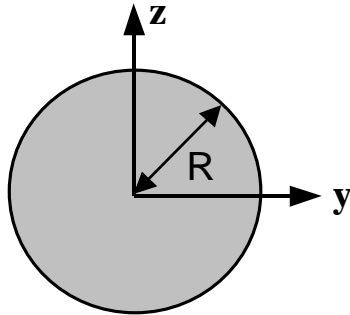
($I_{yz} = 0$, axes of symmetry)

Rectangle



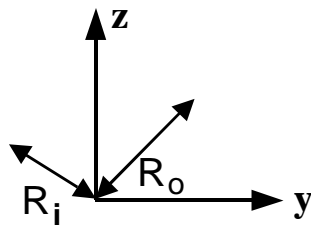
$$I_y = \frac{bh^3}{12}$$

Circle

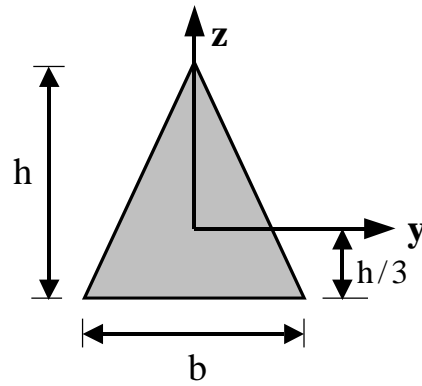


$$I_y = \frac{\pi R^4}{4}$$

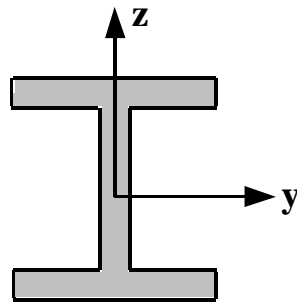
Tube



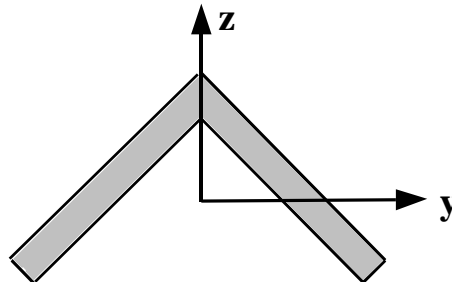
$$I_y = \frac{\pi}{4} [R_o^4 - R_i^4]$$

Triangle

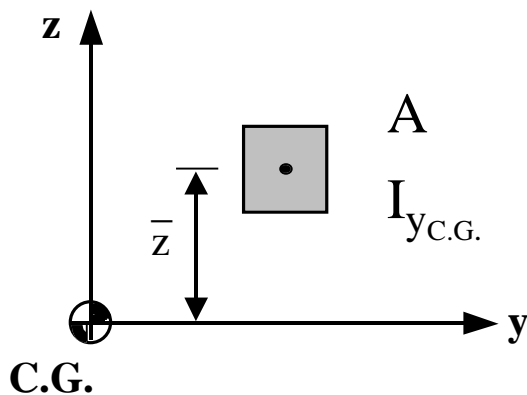
$$I_y = \frac{bh^3}{36}$$

I-beam

$$I_y = \iint z^2 dA$$

Angle

$$I_y = \iint z^2 dA$$

Note:Recall Transfer Theorem

$$I_y = (I_y)_{C.G.} + A\bar{z}^2$$

Also:

$$I_{yz} = (I_{yz})_{C.G.} + A\bar{y}\bar{z}$$