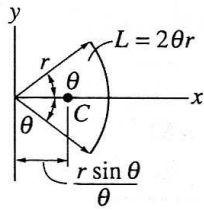


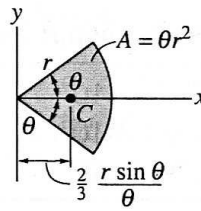
Geometric Properties of Line and Area Elements

Centroid Location



Circular arc segment

Centroid Location

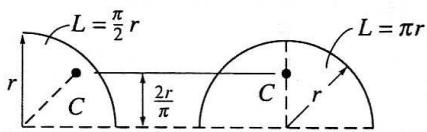


Circular sector area

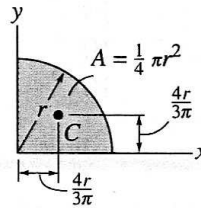
Area Moment of Inertia

$$I_x = \frac{1}{4} r^4 (\theta - \frac{1}{2} \sin 2\theta)$$

$$I_y = \frac{1}{4} r^4 (\theta + \frac{1}{2} \sin 2\theta)$$



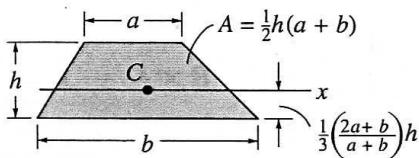
Quarter and semicircle arcs



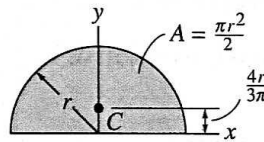
Quarter circle area

$$I_x = \frac{1}{16} \pi r^4$$

$$I_y = \frac{1}{16} \pi r^4$$



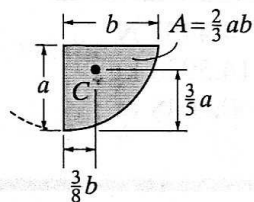
Trapezoidal area



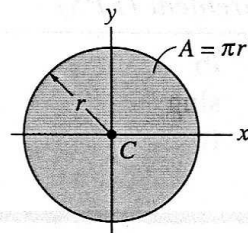
Semicircular area

$$I_x = \frac{1}{8} \pi r^4$$

$$I_y = \frac{1}{8} \pi r^4$$



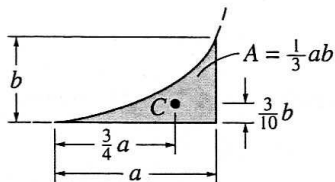
Semiparabolic area



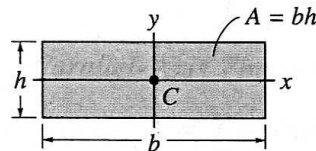
Circular area

$$I_x = \frac{1}{4} \pi r^4$$

$$I_y = \frac{1}{4} \pi r^4$$



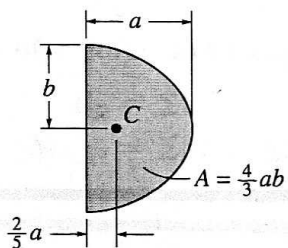
Exparabolic area



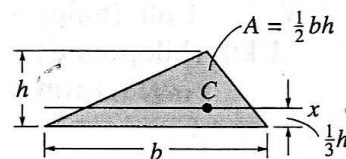
Rectangular area

$$I_x = \frac{1}{12} bh^3$$

$$I_y = \frac{1}{12} hb^3$$



Parabolic area



Triangular area

$$I_x = \frac{1}{36} bh^3$$

$$I_x = \frac{1}{12} bh^3$$

