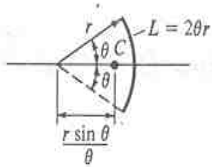


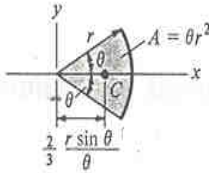
# Geometric Properties of Line and Area Elements

Centroid Location



Circular arc segment

Centroid Location

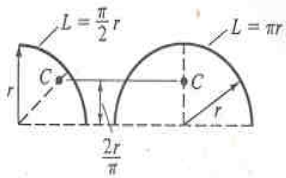


Circular sector area

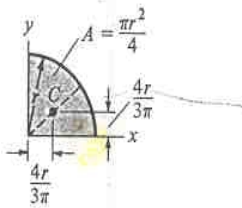
Area Moment of Inertia

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

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



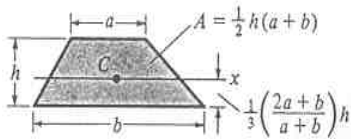
Quarter and semicircular arcs



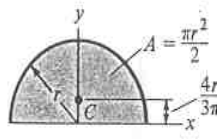
Quarter circular area

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

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



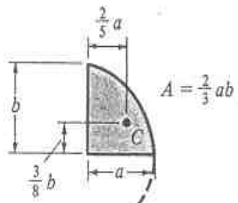
Trapezoidal area



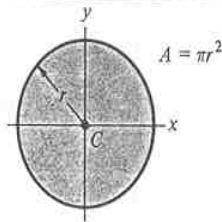
Semicircular area

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

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



Semiparabolic area



Circular area

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

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