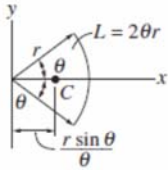
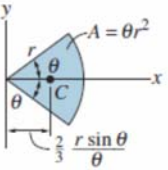
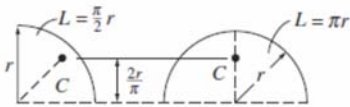
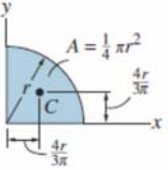
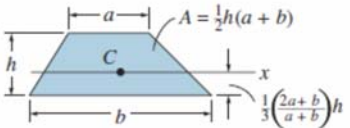
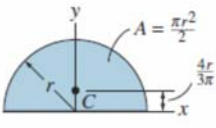
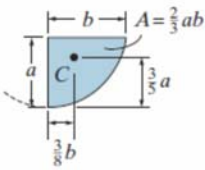
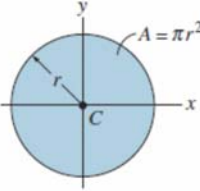
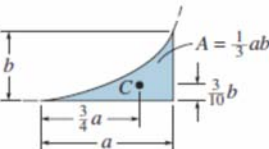
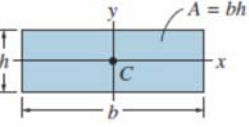
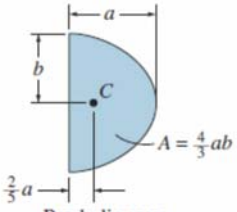
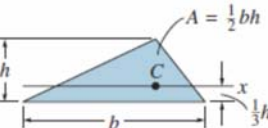
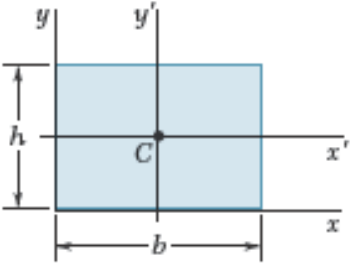
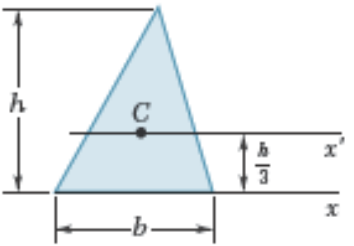
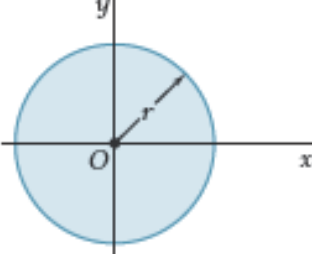
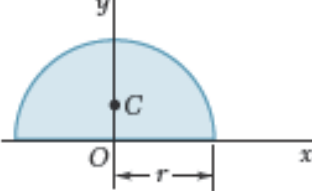
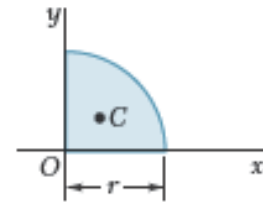
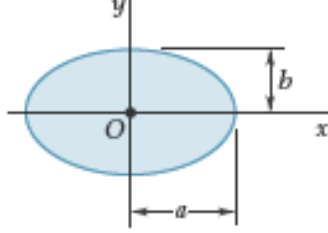


Geometric Properties of Line and Area Elements

Centroid Location	Centroid Location	Area Moment of Inertia
 <p>Circular arc segment</p>	 <p>Circular sector area</p>	$I_x = \frac{1}{4} r^4 (\theta - \frac{1}{2} \sin 2\theta)$ $I_y = \frac{1}{4} r^4 (\theta + \frac{1}{2} \sin 2\theta)$
 <p>Quarter and semicircle arcs</p>	 <p>Quarter circle area</p>	$I_x = \frac{1}{16} \pi r^4$ $I_y = \frac{1}{16} \pi r^4$
 <p>Trapezoidal area</p>	 <p>Semicircular area</p>	$I_x = \frac{1}{8} \pi r^4$ $I_y = \frac{1}{8} \pi r^4$
 <p>Semiparabolic area</p>	 <p>Circular area</p>	$I_x = \frac{1}{4} \pi r^4$ $I_y = \frac{1}{4} \pi r^4$
 <p>Exparabolic area</p>	 <p>Rectangular area</p>	$I_x = \frac{1}{12} b h^3$ $I_y = \frac{1}{12} h b^3$
 <p>Parabolic area</p>	 <p>Triangular area</p>	$I_x = \frac{1}{36} b h^3$

From inside back cover of Hibbler textbook

Rectangle		$\bar{I}_{x'} = \frac{1}{12}bh^3$ $\bar{I}_{y'} = \frac{1}{12}b^3h$ $I_x = \frac{1}{3}bh^3$ $I_y = \frac{1}{3}b^3h$ $J_C = \frac{1}{12}bh(b^2 + h^2)$
Triangle		$\bar{I}_{x'} = \frac{1}{36}bh^3$ $I_x = \frac{1}{12}bh^3$
Circle		$\bar{I}_x = \bar{I}_y = \frac{1}{4}\pi r^4$ $J_O = \frac{1}{2}\pi r^4$
Semicircle		$I_x = I_y = \frac{1}{8}\pi r^4$ $J_O = \frac{1}{4}\pi r^4$
Quarter circle		$I_x = I_y = \frac{1}{16}\pi r^4$ $J_O = \frac{1}{8}\pi r^4$
Ellipse		$\bar{I}_x = \frac{1}{4}\pi ab^3$ $\bar{I}_y = \frac{1}{4}\pi a^3b$ $J_O = \frac{1}{4}\pi ab(a^2 + b^2)$

Area moment of inertia for common shapes [Unknown reference source, TAM 210/211 lecture slides]