

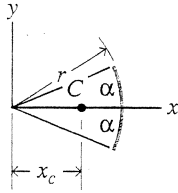
TABLE 5-1 CENTROID LOCATIONS FOR A FEW COMMON LINE SEGMENTS AND AREAS

Circular arc

$$L = 2r\alpha$$

$$x_C = \frac{r \sin \alpha}{\alpha}$$

$$y_C = 0$$

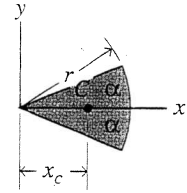


Circular sector

$$A = r^2\alpha$$

$$x_C = \frac{2r \sin \alpha}{3\alpha}$$

$$y_C = 0$$

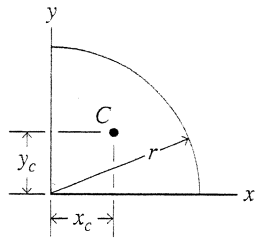


Quarter circular arc

$$L = \frac{\pi r}{2}$$

$$x_C = \frac{2r}{\pi}$$

$$y_C = \frac{2r}{\pi}$$

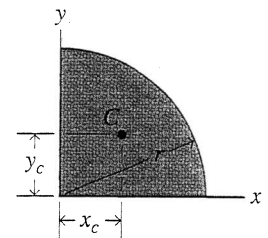


Quadrant of a circle

$$A = \frac{\pi r^2}{4}$$

$$x_C = \frac{4r}{3\pi}$$

$$y_C = \frac{4r}{3\pi}$$

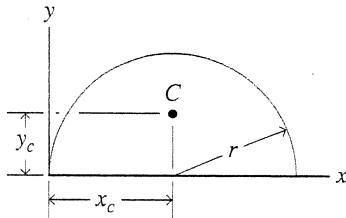


Semicircular arc

$$L = \pi r$$

$$x_C = r$$

$$y_C = \frac{2r}{\pi}$$

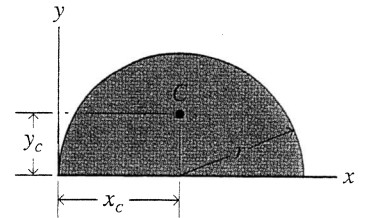


Semicircular area

$$A = \frac{\pi r^2}{2}$$

$$x_C = r$$

$$y_C = \frac{4r}{3\pi}$$

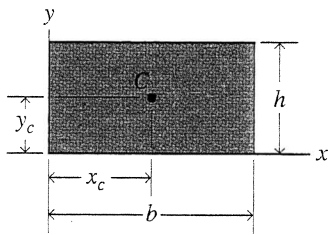


Rectangular area

$$A = bh$$

$$x_C = \frac{b}{2}$$

$$y_C = \frac{h}{2}$$

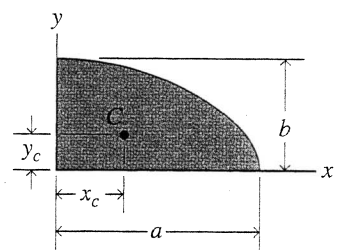


Quadrant of an ellipse

$$A = \frac{\pi ab}{4}$$

$$x_C = \frac{4a}{3\pi}$$

$$y_C = \frac{4b}{3\pi}$$

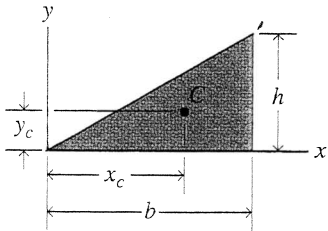


Triangular area

$$A = \frac{bh}{2}$$

$$x_C = \frac{2b}{3}$$

$$y_C = \frac{h}{3}$$

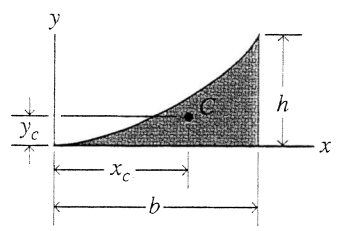


Parabolic spandrel

$$A = \frac{bh}{3}$$

$$x_C = \frac{3b}{4}$$

$$y_C = \frac{3h}{10}$$

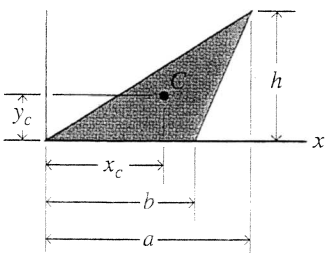


Triangular area

$$A = \frac{bh}{2}$$

$$x_C = \frac{a+b}{3}$$

$$y_C = \frac{h}{3}$$



Quadrant of a parabola

$$A = \frac{2bh}{3}$$

$$x_C = \frac{5b}{8}$$

$$y_C = \frac{2h}{5}$$

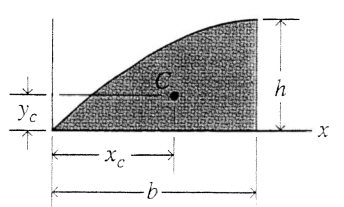


TABLE 5-2 CENTROID LOCATIONS FOR A FEW COMMON VOLUMES

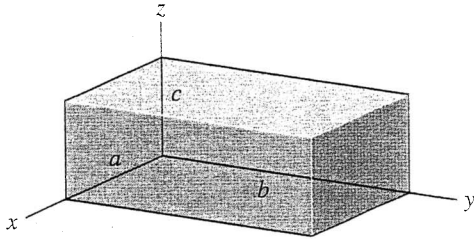
Rectangular parallelepiped

$$V = abc$$

$$x_C = \frac{a}{2}$$

$$y_C = \frac{b}{2}$$

$$z_C = \frac{c}{2}$$



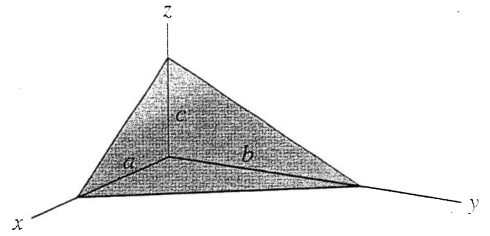
Rectangular tetrahedron

$$V = \frac{abc}{6}$$

$$x_C = \frac{a}{4}$$

$$y_C = \frac{b}{4}$$

$$z_C = \frac{c}{4}$$



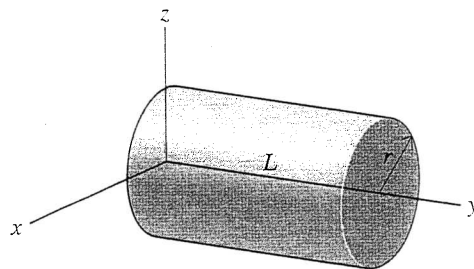
Circular cylinder

$$V = \pi r^2 L$$

$$x_C = 0$$

$$y_C = \frac{L}{2}$$

$$z_C = 0$$



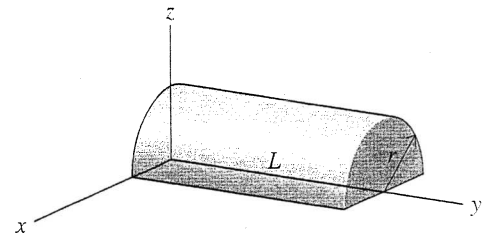
Semicylinder

$$V = \frac{\pi r^2 L}{2}$$

$$x_C = 0$$

$$y_C = \frac{L}{2}$$

$$z_C = \frac{4r}{3\pi}$$



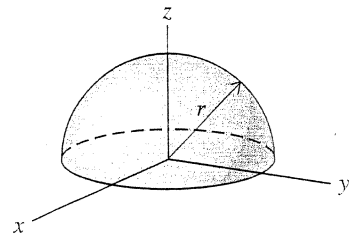
Hemisphere

$$V = \frac{2\pi r^3}{3}$$

$$x_C = 0$$

$$y_C = 0$$

$$z_C = \frac{3r}{8}$$



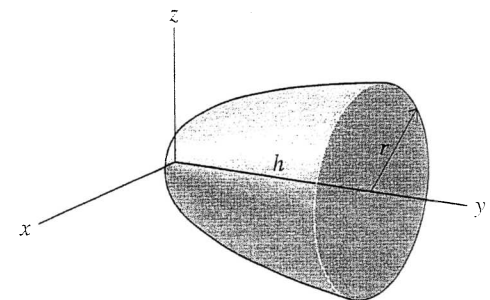
Paraboloid

$$V = \frac{\pi r^2 h}{2}$$

$$x_C = 0$$

$$y_C = \frac{2h}{3}$$

$$z_C = 0$$



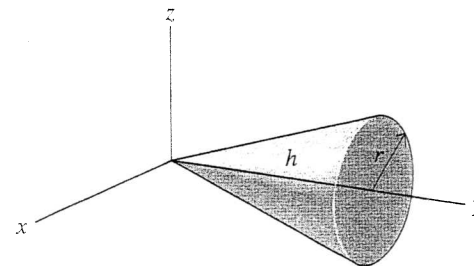
Right circular cone

$$V = \frac{\pi r^2 h}{3}$$

$$x_C = 0$$

$$y_C = \frac{3h}{4}$$

$$z_C = 0$$



Half cone

$$V = \frac{\pi r^2 h}{6}$$

$$x_C = 0$$

$$y_C = \frac{3h}{4}$$

$$z_C = \frac{r}{\pi}$$

