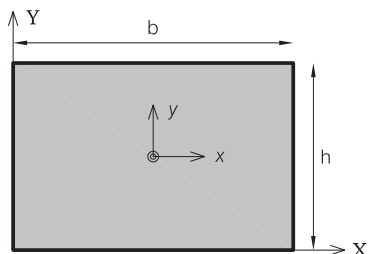


TABLAS de GEOMETRÍA de MASAS

Rectángulo:



$$A = b \cdot h$$

$$I_x = \frac{b \cdot h^3}{12}$$

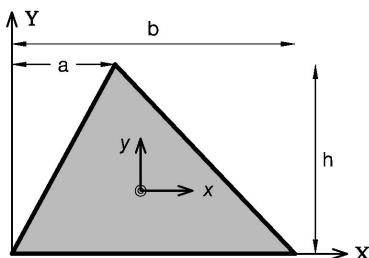
$$x_G = \frac{b}{2}$$

$$I_y = \frac{h \cdot b^3}{12}$$

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

$$I_{xy} = 0$$

Triángulo:



$$A = \frac{b \cdot h}{2}$$

$$I_x = \frac{b \cdot h^3}{36}$$

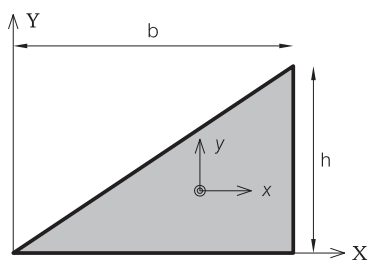
$$x_G = \frac{b+a}{3}$$

$$I_y = \frac{h \cdot b}{36} (b^2 - ba + a^2)$$

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

$$I_{xy} = -\frac{b \cdot h^2}{72} (b-2a)$$

Triángulo Rectángulo (1):



$$A = \frac{b \cdot h}{2}$$

$$I_x = \frac{b \cdot h^3}{36}$$

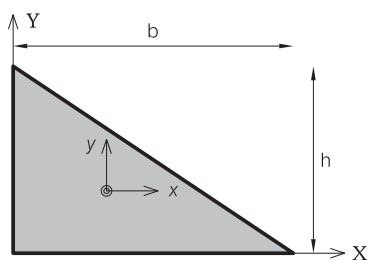
$$x_G = \frac{2b}{3}$$

$$I_y = \frac{h \cdot b^3}{36}$$

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

$$I_{xy} = \frac{b^2 \cdot h^2}{72}$$

Triángulo Rectángulo (2):



$$A = \frac{b \cdot h}{2}$$

$$I_x = \frac{b \cdot h^3}{36}$$

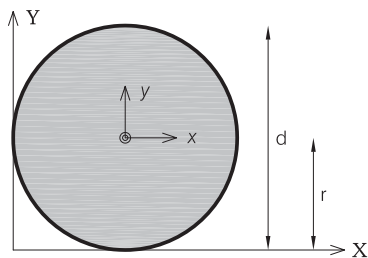
$$x_G = \frac{b}{3}$$

$$I_y = \frac{h \cdot b^3}{36}$$

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

$$I_{xy} = -\frac{b^2 \cdot h^2}{72}$$

Círculo:



$$A = \pi \cdot r^2$$

$$x_G = r$$

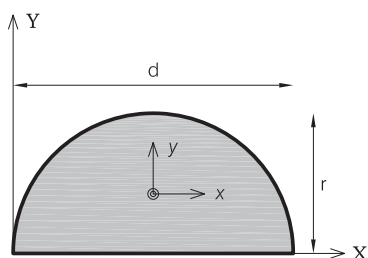
$$y_G = r$$

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

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

$$I_{xy} = 0$$

Medio Círculo:



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

$$x_G = r$$

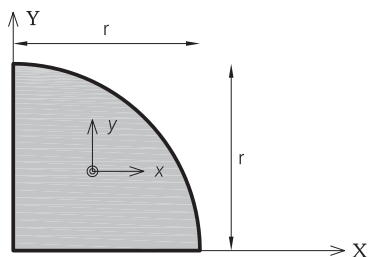
$$y_G = \frac{4 \cdot r}{3 \cdot \pi}$$

$$I_x = \frac{(9\pi^2 - 64) \cdot r^4}{72\pi}$$

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

$$I_{xy} = 0$$

Cuarto de Círculo (1):



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

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

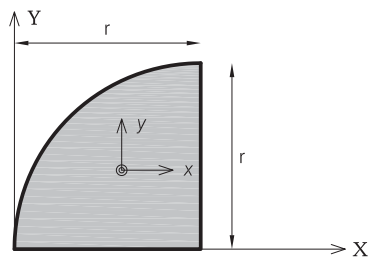
$$y_G = \frac{4r}{3\pi}$$

$$I_x = \frac{(9\pi^2 - 64) \cdot r^4}{144\pi}$$

$$I_y = \frac{(9\pi^2 - 64) \cdot r^4}{144\pi}$$

$$I_{xy} = \frac{(9\pi - 32) \cdot r^4}{72\pi}$$

Cuarto de Círculo (2):



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

$$x_G = \frac{(3\pi - 4) \cdot r}{3\pi}$$

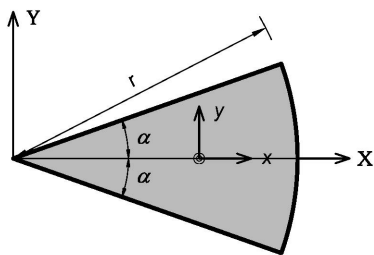
$$y_G = \frac{4r}{3\pi}$$

$$I_x = \frac{(9\pi^2 - 64) \cdot r^4}{144\pi}$$

$$I_y = \frac{(9\pi^2 - 64) \cdot r^4}{144\pi}$$

$$I_{xy} = -\frac{(9\pi - 32) \cdot r^4}{72\pi}$$

Segmento de Círculo:



$$A = \alpha \cdot r^2$$

$$x_G = \frac{2r \cdot \sin \alpha}{3\alpha}$$

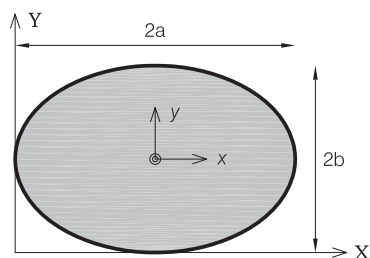
$$y_G = 0$$

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

$$I_y = \left(\alpha + \frac{1}{2} \sin 2\alpha - \frac{16}{9\alpha} \sin^2 \alpha \right) \frac{r^4}{4}$$

$$I_{xy} = 0$$

Elipse:



$$A = \pi \cdot a \cdot b$$

$$x_G = a$$

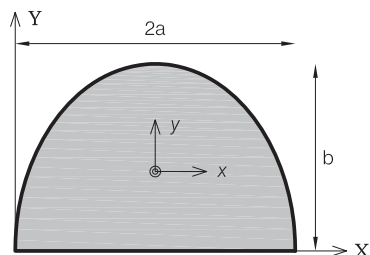
$$y_G = b$$

$$I_x = \frac{\pi \cdot a \cdot b^3}{4}$$

$$I_y = \frac{\pi \cdot b \cdot a^3}{4}$$

$$I_{xy} = 0$$

Media de Elipse:



$$A = \frac{\pi \cdot a \cdot b}{2}$$

$$x_G = a$$

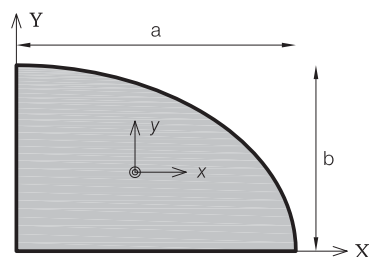
$$y_G = \frac{4b}{3\pi}$$

$$I_x = \frac{(9\pi^2 - 64) \cdot a \cdot b^3}{72\pi}$$

$$I_y = \frac{\pi \cdot b \cdot a^3}{8}$$

$$I_{xy} = 0$$

Cuarto de Elipse:



$$A = \frac{\pi \cdot a \cdot b}{4}$$

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

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

$$I_x = \frac{(9\pi^2 - 64) \cdot a \cdot b^3}{144\pi}$$

$$I_y = \frac{(9\pi^2 - 64) \cdot b \cdot a^3}{144\pi}$$

$$I_{xy} = \frac{(9\pi - 32) \cdot b^2 \cdot a^2}{72\pi}$$

Notas:

- El centro de gravedad de la pieza (x_G, y_G) se da en base al eje de coordenadas X e Y.
- Los momentos y productos de inercia, I_x , I_y e I_{xy} corresponden a los ejes ortogonales x e y que pasan por el centro de gravedad de la pieza