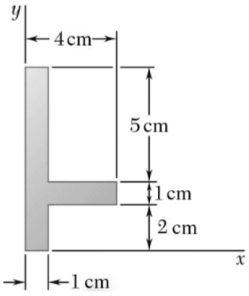
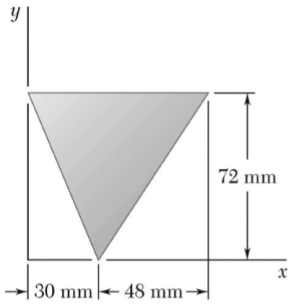


PROBLEM 5.1

Locate the centroid of the plane area shown.

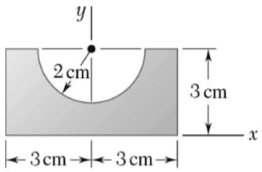
Ans. $\overline{X} = 1.045$ cm., $\overline{Y} = 3.597$ cm.



PROBLEM 5.2

Locate the centroid of the plane area shown.

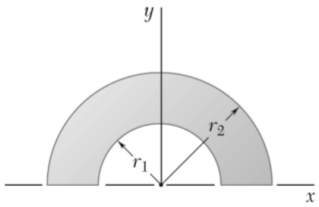
Ans. $\overline{X} = 48.0$ mm., $\overline{Y} = 36.0$ mm.



PROBLEM 5.7

Locate the centroid of the plane area shown.

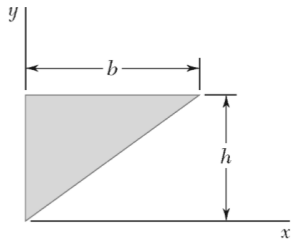
Ans. $\overline{X} = 0$ mm., $\overline{Y} = 1.151$ cm.



PROBLEM 5.39

Determine by direct integration the centroid of the area shown.

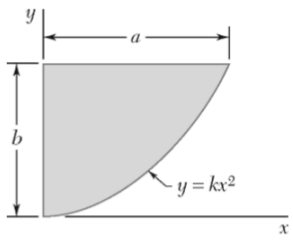
Ans. $\overline{X} = 0,\ \overline{Y} = \dfrac{4}{3\pi}\dfrac{r_2^3 - r_1^3}{r_2^2 - r_1^2}$



PROBLEM 9.1

Determine by direct integration the moment of inertia of the shaded area with respect to the y axis.

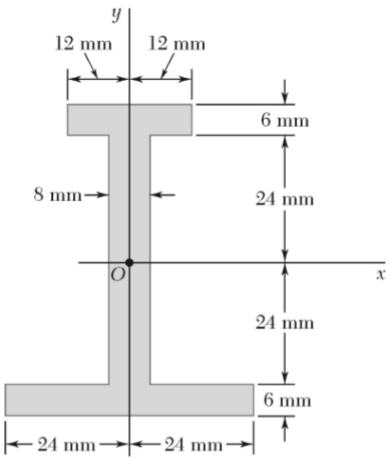
Ans. $I_y = \frac{1}{12} b^3 h$



PROBLEM 9.3

Determine by direct integration the moment of inertia of the shaded area with respect to the y axis.

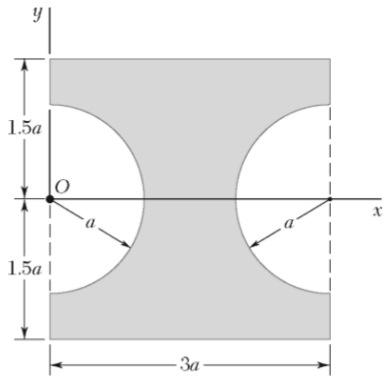
Ans. $I_y = \frac{2}{15} a^3 b$



PROBLEM 9.31

Determine the moment of inertia and the radius of gyration of the shaded area with respect to the x axis.

Ans. $I_x = 390 \times 10^3 \ mm^4$, $k_x = 21.9 \ mm$



PROBLEM 9.36

Determine the moments of inertia of the shaded area shown with respect to the x and y axes when $a = 20$ mm.

Ans. $I_x = 954.3 \times 10^3 \ mm^4$, $I_y = 463.3 \times 10^3 \ mm^4$