

1. Calculate the moments  $M_X$  and  $M_Y$  and the center of mass for a thin plate with density  $\rho = 10$  and the shape bound by  $y = \frac{4}{3}x$ ,  $x = 1$ , and the  $x$ -axis.
2. Calculate the moments  $M_X$  and  $M_Y$  and the center of mass of a semicircular plate with radius  $r$ .
3. Find the centroid (center of mass) of the region bounded by  $y = 4 - x^2$  and  $y = 0$ .
4. Find the centroid of the region bound by  $3x + 2y = 6$ ,  $y = 0$  and  $x = 0$ .