Example 1. Find the moments M_x and M_y, and center of mass $(\bar{x}, \bar{y})$ of the system. The objects have masses 2, 6, and 7 at the points $(-1, 2)$ $(1, 4)$ and $(2, 3)$.

Example 2. Find the center of mass (centroid) of a semicircular plate of radius $r = 3$.

Example 3. Calculate the moments M_x and M_y of the region Example 2 when the density $\rho = 2$.

Example 4. Calculate the moments M_x and M_y and the center of mass (centroid) of a lamina with density $\rho = 3$ and shape R bounded by the curves $y = x^2$ and lines $x = 1$, $y = 0$.

Example 5. Calculate the moments M_x and M_y and the center of mass (centroid) of a lamina with density $\rho = 3$ and shape R bounded by $y = x$, $y = -x$, $x = 2$.

Example 6. Calculate the moments M_x and M_y and the center of mass (centroid) of a lamina with density $\rho = 5$ and shape R bounded by $y = x$ and the parabola $y = x^2$.