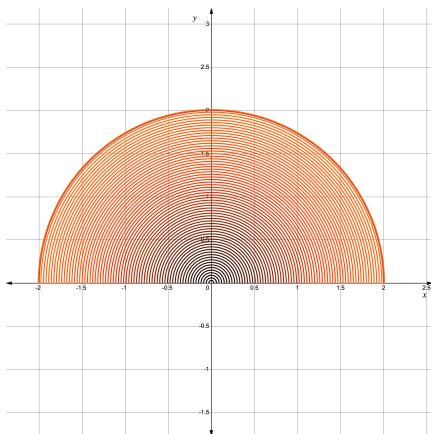


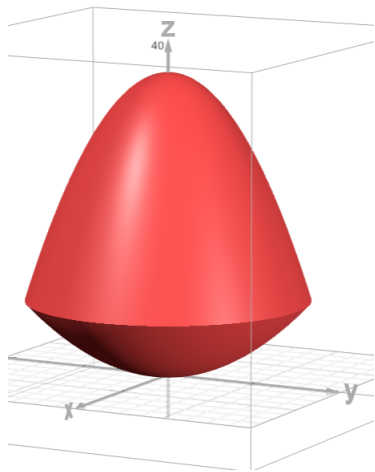
**Example 1.** The density at any point of a semi-circular lamina  $D$  of radius  $2$  is inversely proportional to its distance from the center of the circle. Find the center of mass of the lamina.



**Example 2.** Assume  $xyz$ -coordinates are measured in **cm**. The solid **E** is bounded by the paraboloids  $z = x^2 + y^2$  and  $z = 36 - 3x^2 - 3y^2$  and has constant density:

$$\delta = \frac{1}{27} \text{ in g/cm}^3$$

Locate the center of mass of **E**.



**Example 3.** Assume  $xyz$ -coordinates are measured in **cm**. The solid **E** lies above  $z = 0$  and inside the sphere  $x^2 + y^2 + z^2 = 1$ . The density at point  $(x, y, z)$  in **E** is given by:

$$\delta(x, y, z) = r \text{ in g/cm}^3$$

Locate the center of mass of **E**.

