

Problem 1. Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified line. Sketch the region, the solid, and a typical disk or washer.

1. * $y = 1/x$, $y = 0$, $x = 1$, $x = 4$; about the x -axis.
2. $y = \sqrt{25 - x^2}$, $y = 0$, $x = 2$, $x = 4$; about the x -axis.
3. $y = x^3$, $y = x$, $x \geq 0$; about the x -axis.
4. $y^2 = x$, $x = 2y$; about the y -axis.
5. $x = 2 - y^2$, $x = y^4$ about the y -axis.

Problem 2. Use the method of cylindrical shells to find the volume generated by rotating the region bounded by the given curves about the given axis.

1. * $y = \sqrt[3]{x}$, $y = 0$, $x = 1$; about the y -axis.
2. $y = 4x - x^2$, $y = x$; about the y -axis.
3. $y = x^2$, $y = 6x - 2x^2$; about the y -axis.
4. $x = 1 + (y - 2)^2$, $x = 2$; about the x -axis.
5. $x + y = 4$, $x = y^2 - 4y + 4$; about the x -axis.