

Section 6.3: Volume by Cylindrical Shells

Example: Find the volume of the solid obtained by rotating the region bounded by the given curves around the y -axis.

$$y = 2x - x^2$$

x -axis

Example: Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around x -axis.

$$y = x^2$$

$$y^2 = 8x$$

Example: Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around y -axis.

$$y = x^2 - 4x + 3$$

x -axis

Example: Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around x -axis on the interval $y = 0$ to $y = \frac{\pi}{4}$

$$x = \cos(y)$$

$$x = -1$$

Example: Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around $x = 2$.

$$y = x^2 + 2$$

$$2y - x = 2$$

$$x = 0$$

$$x = 1$$

Example: Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around $x = -3$.

$$y = x^3$$

$$y = 2x + 4$$

$$x = 0$$