Chapter 5
Applications in integration

5.3 Volumes by Cylindrical Shells

Illustrative Example. (Rotation about the y-axis)

Example 1.

Find the volume of the solid obtained by rotating about the y-axis the region bounded by $y = 2x^2 - x^3$ and $y = 0$.

Example 3.

Use cylindrical shells to find the volume of the solid obtained by rotating about the x-axis the region under the curve $y = \sqrt{x}$ from 0 to 1.

Rotation about another axis.

Example 4.

Find the volume of the solid obtained by rotating the region bounded by $y = x - x^2$ and $y = 0$ about the line $x = 2$.