

Volume by Cross Sections

Directions: Find the volume of the indicated solid.

1. The base of a solid is the region enclosed by a semicircle of radius 3, lying flat on the x-axis. Cross sections perpendicular to the y-axis are squares. Find the volume of the solid.
2. The base of a solid is the region enclosed by $y = -\frac{x^2}{9} + 4$ and $y = 0$. Cross sections perpendicular to the x-axis are rectangles with heights twice that of the side in the xy-plane. What is the volume of the solid?
3. The base of the solid is an elliptical region given by $9x^2 + 4y^2 = 36$. Cross sections perpendicular to the x-axis are isosceles right triangles with the hypotenuse in the base.
4. The base of the solid is the triangular region with vertices (0,0), (0,1), and (1,0). Cross sections perpendicular to the y-axis are equilateral triangles.
5. The base of the solid is the region enclosed by the parabola $y = 1 - x^2$ and the x-axis. Cross sections perpendicular to the y-axis are squares.
6. The base of the solid is the region enclosed by the parabola $y = 1 - x^2$ and the x-axis. Cross sections perpendicular to the x-axis are semicircles.
7. The base of the solid is the region enclosed by $y = 2 - x^2$ and the x-axis. Cross sections perpendicular to the y-axis are quarter circles.