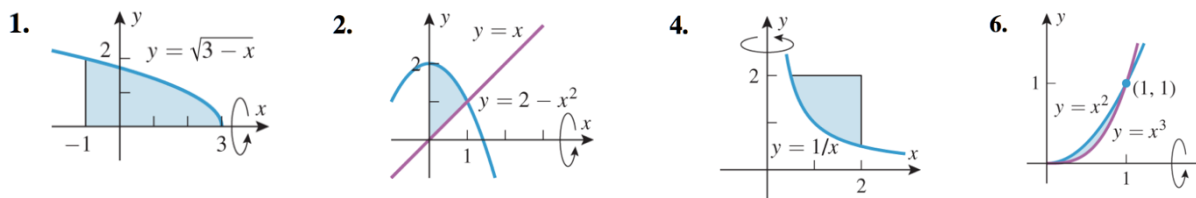


Section 6.2: Volumes by Slicing; Disks and Washers

Find the volume of the solid that results when the shaded region is revolved about the axis.



9. Find the volume of the solid whose base is the region bounded between the curve $y = x^2$ and the x -axis from $x=0$ to $x=2$ and whose cross sections taken perpendicular to the x -axis are squares.

19. Find the volume of the solid whose base is the region bounded between the curve $y = x^3$ and the y -axis from $y=0$ to $y=1$ and whose cross sections taken perpendicular to the y -axis are squares.

37. Consider the solid generated by revolving the shaded region in Exercise 1 about the line $y=2$.

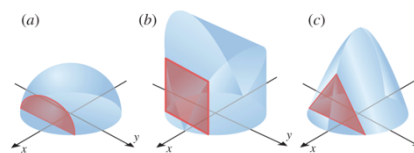
- Make a conjecture as to which is larger: the volume of the solid or the volume of the solid in Exercise 1. Explain the basis of your conjecture.
- Check your conjecture by calculating this volume and comparing it to the volume obtained in Exercise 1.

39. Find the volume of the solid that results when the region enclosed by $y = \sqrt{x}$, $y = 0$, and $x = 9$ is revolved about the line $x = 9$.

40. Find the volume of the solid that results when the region in #39 is revolved about $y = 3$.

49. Find the volume of the solid whose base is enclosed by the circle $x^2 + y^2 = 1$ and whose cross sections taken perpendicular to the x -axis are:

- semicircles
- squares
- equilateral triangles

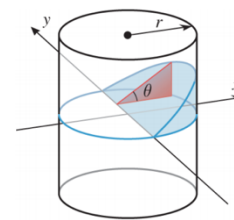


Use a CAS to estimate the volume of the solid that results when the region enclosed by the curves is revolved about the stated axis.

51. $y = \sin^8 x$, $y = \frac{2x}{\pi}$, $x = 0$, $x = \frac{\pi}{2}$; x -axis

53. $y = e^x$, $y = 1$, $x = 1$; y -axis

61. A wedge is cut from a right circular cylinder r by two planes, one perpendicular to the axis of the cylinder and the other making an angle θ with the first. Find the volume of the wedge by slicing perpendicular to the y -axis as shown in the accompanying figure.



62. Find the volume of the wedge described in Exercise 61 by slicing perpendicular to the x -axis.