

Exercises 6.2

Use the disk method to find the volumes of the solids generated by revolving the regions bounded by the lines and curves in Exercises 1–8 about the x -axis.

1. $x + y = 2$, $y = 0$, $x = 0$
2. $y = x^2$, $y = 0$, $x = 2$
3. $y = \sqrt{9 - x^2}$, $y = 0$
4. $y = x - x^2$, $y = 0$
5. $y = x^3$, $y = 0$, $x = 2$
6. $y = e^x$, $y = 0$, $x = 0$, $x = \ln 2$
7. $y = \sqrt{\cos x}$, $0 \leq x \leq \pi/2$, $y = 0$, $x = 0$
8. $y = \sec x$, $y = 0$, $x = -\pi/4$, $x = \pi/4$

Use the disk method to find the volumes of the solids generated by revolving about the y -axis the regions bounded by the lines and curves in Exercises 9–16.

9. $y = x/2$, $y = 2$, $x = 0$
10. $x = \sqrt{4 - y}$, $x = 0$, $y = 0$
11. $x = \sqrt{5}y^2$, $x = 0$, $y = -1$, $y = 1$
12. $x = 1 - y^2$, $x = 0$
13. $x = y^{3/2}$, $x = 0$, $y = 2$
14. $x = \sqrt{2 \sin 2y}$, $0 \leq y \leq \pi/2$, $x = 0$
15. $x = 2/\sqrt{y+1}$, $x = 0$, $y = 0$, $y = 3$
16. $x = 2/(y+1)$, $x = 0$, $y = 0$, $y = 1$

Use the washer method to find the volumes of the solids generated by revolving about the x -axis the regions bounded by the lines and curves in Exercises 17–24.

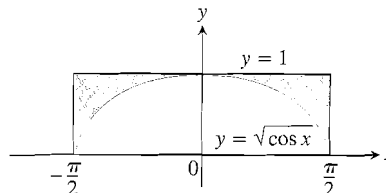
17. $y = x$, $y = 1$, $x = 0$
18. $y = 2x$, $y = x$, $x = 1$
19. $y = x^2$, $y = 4$, $x = 0$
20. $y = x^2 + 3$, $y = 4$
21. $y = x^2 + 1$, $y = x + 3$
22. $y = 4 - x^2$, $y = 2 - x$
23. $y = \sec x$, $y = \sqrt{2}$, $-\pi/4 \leq x \leq \pi/4$
24. $y = 2/\sqrt{x}$, $y = 2$, $x = 4$

Use the washer method to find the volumes of the solids generated by revolving the regions bounded by the lines and curves in Exercises 25–30 about the y -axis.

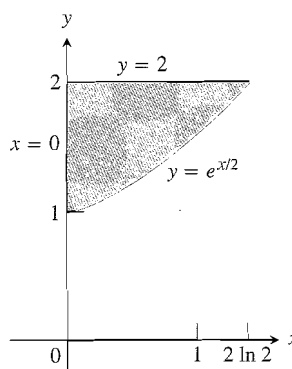
25. $y = x - 1$, $y = 1$, $x = 1$
26. $y = x - 1$, $y = 0$, $x = 4$
27. $y = x^2$, $y = 0$, $x = 2$
28. $y = x$, $y = \sqrt{x}$
29. The semicircle $x = \sqrt{25 - y^2}$ and the y -axis
30. The semicircle $x = \sqrt{25 - y^2}$ and the line $x = 4$

Find the volume of the solid generated by revolving the shaded region about the indicated axis in Exercises 31–34.

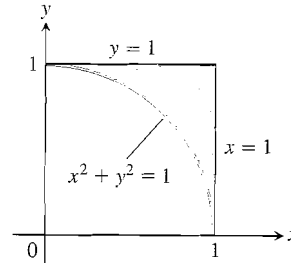
31. The x -axis



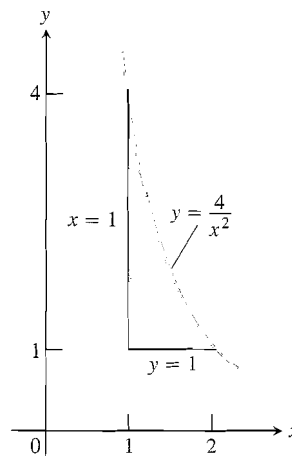
32. The x -axis



33. The y -axis



34. a) The x -axis b) The y -axis



35. Find the volume of the solid generated by revolving the region bounded by $y = \sqrt{x}$ and the lines $y = 2$ and $x = 0$

- a) about the x -axis,
- b) about the y -axis,
- c) about the line $y = 2$,
- d) about the line $x = 4$.