Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 4.8

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1. (1 pt)
Let R be the region bounded by $y = x^2 + 2x + 4$ and $y = 0$ between $x = 1$ and $x = 2$.
    What is the volume of the solid of revolution obtained by rotating R about the x-axis?
    Volume of solid = _____ cubic units

2. (1 pt)
Let R be the finite region bounded by $y = \frac{3}{x}$ and $x + 2y = 5$. What is the volume of the solid of revolution obtained by rotating R about the x-axis?
    Volume of solid = _____ cubic units

3. (1 pt)
What percentage of the volume of a ball of radius 3 is removed if a hole of radius 2 is drilled through the center of the ball?

____

    A. about 9 percent
    B. about 25 percent
    C. about 67 percent
    D. about 41 percent
    E. about 59 percent

4. (1 pt)
Let R be the finite region bounded by $y = e^x$, $x = -4$, and $x = 0$. What is the volume of the solid of revolution obtained by rotating R about the x-axis?
    Volume of solid = _____ cubic units

5. (1 pt)
Let R be the finite region bounded by $y = -x^2 + 10$, $y = 4x$, and $y = 0$. What is the volume of the solid of revolution obtained by rotating R about the y-axis?
    Volume of solid = _____ cubic units

6. (1 pt)
Let R be the finite region bounded by $y = \sqrt{2x}$, $x = 7$, $x = 12$. What is the volume of the solid of revolution obtained by rotating R about the x-axis?
    Volume of solid = _____ cubic units

7. (1 pt)
Let R be the finite region bounded by $y = \sqrt{15x}$, $x = 9$, $x = 14$. What is the volume of the solid of revolution obtained by rotating R about the y-axis?
    Volume of solid = _____ cubic units

8. (1 pt)
Let R be the finite region bounded by $y = 3\sec(x)$, $x = -1$, $x = 1$, and the x axis. What is the volume of the solid of revolution obtained by rotating R about the x-axis?
    Volume of solid = _____ cubic units

9. (1 pt)
Let R be the finite region bounded by a circle $(x - 9)^2 + y^2 = 4$. What is the volume of the solid of revolution obtained by rotating R about the y axis?
    Volume of solid = _____ cubic units

10. (1 pt)
Let R be the finite region bounded by $y = -10x^2 + 3$, $x = 0$, $y = -3$. What is the volume of the solid of revolution obtained by rotating R about the y-axis?
    Volume of solid = _____ cubic units

11. (1 pt)
What is the volume of the solid generated by revolving the region bounded by the curve $y = x^{17}$, the line $x = 16$, and the x-axis around the x-axis?
    Volume = _____

12. (1 pt)
Find the volume of the solid generated by rotating the region bounded by the y-axis, the line $y = 16$, and the curve $y = x^4$ around the x-axis.
    _____

13. (1 pt)
Find the volume of the solid generated by rotating the region bounded by the y-axis, the line $y = 15$, the line $y = -25$ and the curve $y = \ln(x)$ around the y-axis.
    _____

14. (1 pt)
Find the volume of the solid generated by rotating the region bounded by the x-axis, the line $x = \frac{\pi}{6}$, and the curve $y = \sqrt{\tan(x)}$ around the x-axis.
    _____

15. (1 pt)
Find the volume of the solid generated by rotating the circle $(x - 12)^2 + y^2 = 16$ around the y-axis.
    _____

16. (1 pt)
Find the volume of the solid generated by rotating the ellipse $\frac{x^2}{10^2} + \frac{(y - 10)^2}{9^2} = 1$ around the x-axis.
    _____

17. (1 pt)
Find the volume of the solid generated by rotating the region bounded by $y = x$, $y = 5 - x$, and $x = 7$ around the line $x = 7$.
    _____

18. (1 pt)
Find the volume of the solid generated by rotating the region bounded by $x = \frac{-\pi}{5}$, $x = \frac{\pi}{5}$, and $y = \sec(x)$ around the x axis.
    _____

19. (1 pt)
What is the volume of the solid generated by rotating the region bounded by curve $y = \dfrac{1}{\sqrt{64x^2 + 1}}$, the line x = 84, and the x axis around the x axis?

20. (1 pt)
Find the volume of the solid generated by rotating the region bounded by $y = \sqrt{9 - x^2} + 6$ and the line $y = 6$ around the x axis.