

MATE 3032 assignment 2: sections 6.3, 7.1

In all problems where you have to find a volume, provide the usual figures: region if solid of rotation, solid, and a typical shell or annulus.

9. Find the volume generated by rotating the region bounded by the given curves about the y-axis.

(a) $y = e^{-x^2}$, $y = 0$, $x = 0$, $x = 2$.

(b) $x = y^{3/2}$, $y = 0$, $x = 6$.

10. Describe the solid with volume $2\pi \int_1^4 \frac{1+2x}{x^2} dx$.

11. Exercise 41 p.455.

12. Exercise 44 p.455, replacing the vertex (1, 2) by (2, 1).

13. Sketch the region under the graph of $y = \ln(2x)$, $1 \leq x \leq e$ and compute its area.

14. Evaluate $\int_1^3 t^3 \ln(t) dt$.

15. Exercise 39 p.477.

16. Exercise 47 p.477.

17. Exercise 65 p.477.

18. Find the volume generated by rotating the region bounded by the curves

$$y = e^x, y = e^{-2x}, x = 1$$

about the y-axis. Which of the two methods is preferable?