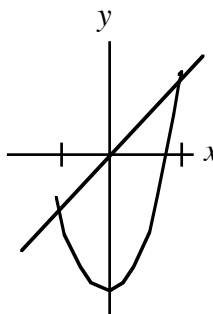


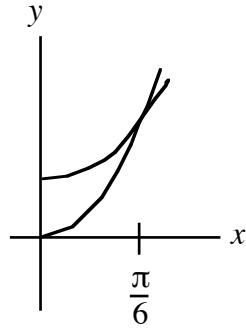
Chapter 6

Find the area of the region bounded by the given curves/lines.

1. $y = x^2 - 6$ and $y = x$

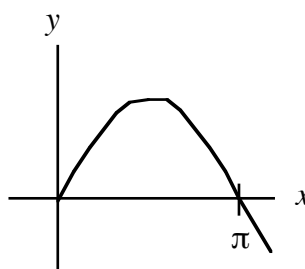


2. $y = \sec(x)$, $y = 2\tan(x)$, from $x = 0$ to $x = \frac{\pi}{6}$

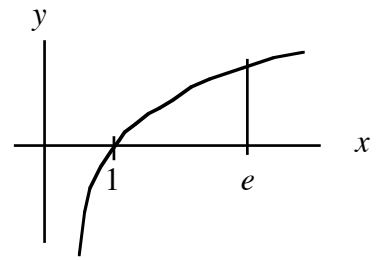


Find the area of the region described. Draw a typical rectangle in the diagram as well as the associated disk, washer or cylindrical shell.

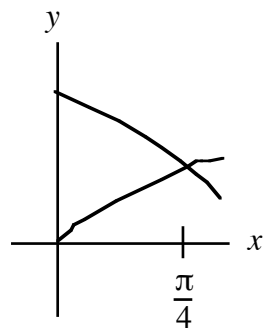
3. $y = \sin x$ and the x -axis, $0 \leq x \leq \pi$, rotated about the x -axis



4. $y = \ln(x)$, and the x -axis, $1 \leq x \leq e$, rotated about the y -axis



5. $y = \sin(x)$ and $y = \cos(x)$, $0 \leq x \leq \frac{\pi}{4}$, rotated about the x -axis



Chapter 7

Evaluate each using a technique of integration.

6. $\int x^3 e^{x^2} dx$

7. $\int x \tan^{-1}x \, dx$

8. $\int e^{\sqrt{x}} dx$

9. $\int x \sin x \cos x dx$

10. $\int (\cos + \sin x)^2 dx$

11. $\int \tan^3 x \sec^3 x \, dx$

12. $\int \frac{1}{x^2\sqrt{4+x^2}} dx$

13. $\int \frac{1}{\sqrt{x^2 - 1}} dx$

14. $\int \frac{1}{x^3 + x^2} dx$

15. $\int \frac{1}{\sqrt{x}(1+\sqrt{x})} dx$

Determine whether the improper integral converges or diverges. If it converges, find its value.

16. $\int_1^{\infty} \frac{\sqrt{\ln x}}{x^2} dx$ **is not integrable. Please change it to ...**

a) $\int_1^{\infty} \frac{\sqrt{\ln x}}{x} dx$

b) $\int_1^{\infty} \frac{\ln x}{x^2} dx$

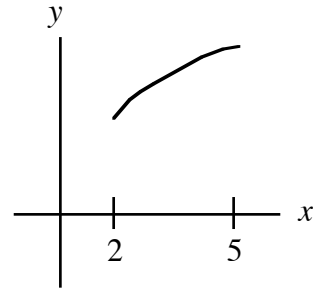
17. $\int_0^1 \frac{x-1}{\sqrt{x}} dx$

Chapter 8

Set up the integral and simplify the integrand—but do not solve—for the requested value.

- 18.** The arc length of the function on the given interval.

$$y = x^{3/2}, \text{ for } 2 \leq x \leq 5$$



- 19.** The area of the surface of revolution.

$$y = x^{3/2}, \text{ for } 2 \leq x \leq 5 \text{ rotated about the y-axis.}$$

