

## Answers to Even-Numbered Exercises

### Exercises 5.1

2.  $C(x) = 500x - 0.005x^2 + 4,000$

8.  $-5000e^{-0.02t} - 50 \ln |t|$

12. verify

16.  $A=1/12$

18.  $A = -1$

22.  $A=-1/2$

34.  $\frac{1}{3}x^3 - \frac{3}{2}x^2 + x + c$

38.  $-2e^{-0.5t} + c$

46.  $y = \frac{1}{2}x^2 + \ln |x| + c$

52.  $y = x^2 + x - 3$

62.  $C(q) = 2q^3 - 2q^2 + 8q + 492$  and  $C(20) = 15,852$  dollars

70. \$2300

72. (a) 5 seconds. (b) 150 feet.

76. (a)  $F(t) = -50e^{-0.14t} + 100$

(b) 11.5 hours

(c) 100

### Exercises 5.2

2.  $\frac{1}{2}(\ln x)^2 + c$

4.  $-\frac{1}{2+e^t} + c$

6.  $\frac{1}{3}e^{x^3-3x+1} + c$

10.  $e^x - \ln(1 + e^x) + c$

18.  $\frac{1}{6}(t^4 + 1)^{3/2} + c$

28.  $\frac{1}{3}(1 + e^{2x})^{3/2} + c$

32.  $y = \frac{1}{6}(4t + 1)^{3/2} - \frac{3}{2}$

### Exercises 5.3

2.  $x \ln x - x + c$

8.  $t^3 e^t - 3t^2 e^t + 6t e^t - 6e^t + c$

14.  $\frac{1}{6} \cdot \frac{1}{x-3} - \frac{1}{6} \cdot \frac{1}{x+3}$

18.  $\frac{1}{5} \ln \left| \frac{t-2}{t+3} \right| + c$

32.  $R(t) = 4 \ln \frac{3(t+5)}{5(t+3)} + 2, \quad t \approx 3.71$

### Exercises 5.4

4. 22.2

6. 7.1

### Exercises 5.5

26.  $\frac{7}{2} - 2e$

32.  $\frac{1}{2}(1 - e^{-1})$

36.  $\frac{1}{2}$

56. 4633.33

### Exercises 5.6

10.  $-1 + e^{-2}$

36.  $\frac{7}{2}$

48. 12, 295.62

### Exercises 5.7

8. The midpoint rule gives  $\int_0^1 e^{\sqrt{x}} dx \approx 2.00546$ , and the trapezoidal rule gives  $\int_0^1 e^{\sqrt{x}} dx \approx 1.978355$ .