## CHAPTER 6

### Section 6.1 Exercises, pp. 410–416

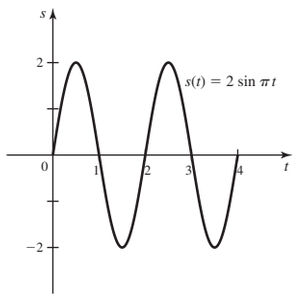
**1.** The position $s(t)$ is the location of the object relative to the origin. The displacement is the change in position between time $t = a$ and $t = b$. The distance traveled between $t = a$ and $t = b$ is $\int_a^b |v(t)|\,dt$, where $v(t)$ is the velocity at time $t$. **3.** The displacement between $t = a$ and $t = b$ is $\int_a^b v(t)\,dt$. **5.** $Q(t) = Q(0) + \int_0^t Q'(x)\,dx$

**7. a.** $[0, 1), (3, 5]$ **b.** $-4$ mi **c.** 26 mi **d.** 6 mi **e.** 6 mi on the positive side of the initial position **9. a.** 3 **b.** $\frac{13}{3}$ **c.** 3

**d.** $s(t) = \begin{cases} -\dfrac{t^2}{2} + 2t & \text{if } 0 \le t \le 3 \\ \dfrac{3t^2}{2} - 10t + 18 & \text{if } 3 < t \le 4 \\ -t^2 + 10t - 22 & \text{if } 4 < t \le 5 \end{cases}$

**11. a.** 3 m **b.** 3 m; 0 m; 3 m; 0 m **c.** 12 m
**13. a.** Positive direction for $2 < t \le 3$; negative direction for $0 < t < 2$ **b.** 0 m **c.** 8 m **15. a.** Positive direction for $0 \le t < 2$ and $4 < t \le 5$; negative direction for $2 < t < 4$
**b.** 20 m **c.** 28 m **17. a.** $s(t) = 2 - \cos t$ **19. a.** $s(t) = 6t - t^2$
**21. a.** $s(t) = 9t - \dfrac{t^3}{3} - 2$ **23. a.** $s(t) = 2 \sin \pi t$

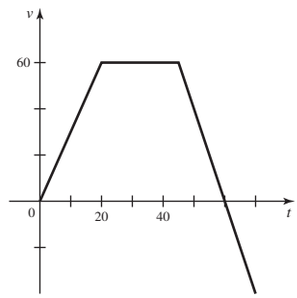
**b.**




**c.** $\frac{3}{2}, \frac{7}{2}, \frac{11}{2}$ **d.** $\frac{1}{2}, \frac{5}{2}, \frac{9}{2}$

**25. a.** $s(t) = 10t(48 - t^2)$ **b.** 880 mi **c.** $\dfrac{2720\sqrt{6}}{9} \approx 740.29$ mi

**27.**




**a.** Velocity is a maximum for $20 \le t \le 45$; $v = 0$ at $t = 0$ and $t = 60$ **b.** 1200 m **c.** 2550 m **d.** 2100 m

**29.** $v(t) = -32t + 70$; $s(t) = -16t^2 + 70t + 10$
**31.** $v(t) = -9.8t + 20$; $s(t) = -4.9t^2 + 20t$
**33.** $v(t) = -\frac{1}{200}t^2 + 10$; $s(t) = -\frac{1}{600}t^3 + 10t$
**35.** $v(t) = \frac{1}{2}\sin 2t + 5$; $s(t) = -\frac{1}{4}\cos 2t + 5t + \frac{29}{4}$
**37. a.** $s(t) = 44t^2$ **b.** 704 ft **c.** $\sqrt{30} \approx 5.477$ s

**d.** $\dfrac{5\sqrt{33}}{11} \approx 2.611$ s **e.** Approx. 180.023 ft

**39.** 6.154 mi; 1.465 mi **41. a.** 2639 people
**b.** $P(t) = 250 + 20t^{3/2} + 30t$ people **43. a.** 1897 cells; 1900 cells **b.** $N(t) = 1900 - 400e^{-0.25t}$ **45. a.** 27,250 barrels **b.** 31,000 barrels **c.** 4000 barrels **47. a.** $\dfrac{10^7(1 - e^{-kt})}{k}$

**b.** $\dfrac{10^7}{k}$ = total number of barrels of oil extracted if the nation extracts the oil indefinitely, and it has at least $\dfrac{10^7}{k}$ barrels of oil in reserve.

**c.** $k = \dfrac{1}{200} = 0.005$ **d.** Approx. 138.6 yr

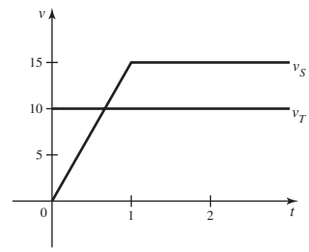
**49. a.** $\dfrac{120}{\pi} + 40 \approx 78.20$ m$^3$

**b.** $Q(t) = 20\left(t + \dfrac{12}{\pi}\sin\left(\dfrac{\pi}{12}t\right)\right)$ **c.** Approx. 122.6 hr

**51. a.** $V(t) = 5 + \cos\dfrac{\pi t}{2}$ **b.** 15 breaths/min **c.** 2 L, 6 L

**53. a.** 7200 MWh or $2.592 \times 10^{13}$ J **b.** 16,000 kg; 5,840,000 kg
**c.** 450 g; 164,250 g **d.** About 1500 turbines **55. a.** \$96,875
**b.** \$86,875 **57. a.** \$69,583.33 **b.** \$139,583.33 **59. a.** False
**b.** True **c.** True **d.** True **61.** $\frac{2}{3}$ **63.** $\frac{25}{3}$

**65. a.**




**b.** Theo **c.** Sasha **d.** Theo hits the 10-mi mark before Sasha; Sasha and Theo hit the 15-mi mark at the same time; Sasha hits the 20-mi mark before Theo. **e.** Sasha **f.** Theo

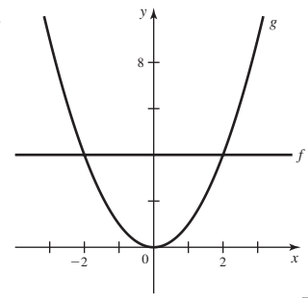
**67.** Approx. 11:23 A.M.

**69.** $\int_a^b f'(x)\,dx = f(b) - f(a) = g(b) - g(a) = \int_a^b g'(x)\,dx$

### Section 6.2 Exercises, pp. 420–425

**1.** $\int_a^b (f(x) - g(x))\,dx + \int_b^c (g(x) - f(x))\,dx$

**3.**




**5. a.** 1 **b.** 1
**7.** $\int_0^1 y\,dy + \int_1^2 (2 - y)\,dy$
**9.** $\dfrac{9}{2}$ **11.** $3\pi - 2$
**13.** $\dfrac{5}{2} - \dfrac{1}{\ln 2}$
**15.** $2 - \sqrt{2}$
**17.** $\dfrac{4}{3}$ **19.** $\dfrac{32}{3}$

**21.** 9 **23.** $\dfrac{81}{2}$ **25.** 2 **27.** $\dfrac{8\sqrt{2} - 7}{6}$ **29.** $\dfrac{125}{2}$

**31. a.** $\int_0^1 \left(\sqrt{x} - x^3\right)dx$ **b.** $\int_0^1 \left(\sqrt[3]{y} - y^2\right)dy$

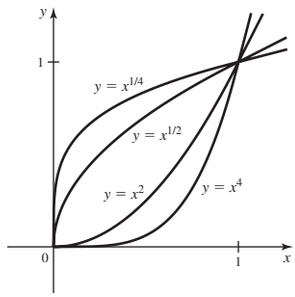
**33.** $\frac{19}{6} \approx 3.17$ km; the faster runner jogged approximately 3.17 km farther than the slower runner. **35. a.** 7 **b.** 4 **37.** 25 **39.** $\frac{81}{32}$
**41.** $\pi - 2$ **43.** $\frac{1}{2} + \ln 2$ **45.** $\frac{7}{3}$ **47.** 3 **49.** $\frac{64}{5}$ **51.** $\ln 2$
**53.** $\frac{5}{24}$ **55.** $\frac{63}{4}$ **57.** $\frac{9}{2}$ **59.** $\frac{32}{3}$ **61.** $\frac{15}{8} - 2\ln 2$ **63.** $\frac{17}{3}$
**65. a.** False **b.** False **c.** True **67.** $\frac{4}{9}$ **69.** $\dfrac{n - 1}{2(n + 1)}$

**71.** $A_n = \dfrac{n - 1}{n + 1}$; $\lim\limits_{n\to\infty} A_n = 1$; the region approximates a square with side length of 1. **73.** $k = 1 - \dfrac{1}{\sqrt{2}}$ **75. a.** The lowest $p\%$ of households own exactly $p\%$ of the wealth for $0 \le p \le 100$.

**b.** The function must be one-to-one and its graph must lie below $y = x$ because the poorest $p\%$ cannot own more than $p\%$ of the wealth. **c.** $p = 1.1$ is most equitable; $p = 4$ is least equitable.

**e.** $G(p) = \dfrac{p-1}{p+1}$ **f.** $0 \le G \le 1$ for $p \ge 1$ **g.** $\frac{5}{18}$

**77. a.**




**b.** $A_n(x)$ is the net area of the region between the graphs of $f$ and $g$ from 0 to $x$. **c.** $x = n^{n/(n^2-1)}$; the root decreases with $n$.

## Section 6.3 Exercises, pp. 434–439

**1.** $A(x)$ is the area of the cross section through the solid at the point $x$.

**3. a.** $3 - x$ **b.** $\displaystyle\int_0^2 (3-x)\,dx$ **5. a.** $\sqrt{\cos x}$ **b.** $\pi \cos x$

**c.** $\displaystyle\int_0^{\pi/2} \pi \cos x\,dx$ **7. a.** $\sqrt{x} + 1$ **b.** 1 **c.** $\pi((\sqrt{x}+1)^2 - 1)$

**d.** $\displaystyle\int_0^4 \pi((\sqrt{x}+1)^2 - 1)\,dx$ **9. a.** $\sqrt{x}$ **b.** $\pi x$ **c.** $\displaystyle\int_0^4 \pi x\,dx$

**11.** $\dfrac{4}{3}$ **13.** 1 **15.** $\dfrac{\pi}{3}$ **17.** $36\pi$ **19.** $\dfrac{15\pi}{32}$ **21.** $\dfrac{\pi^2}{2}$ **23.** $\dfrac{32\pi}{3}$

**25.** $\dfrac{5\pi}{6}$ **27.** $\dfrac{2\pi}{5}$ **29.** $\dfrac{\pi^2}{4}$ **31.** $\dfrac{\pi^2}{2}$ **33.** $\dfrac{\pi(\pi-2)}{8}$

**35.** $\dfrac{4\pi - \pi^2}{4}$ **37.** $\dfrac{128\pi}{5}$ **39.** $\pi \ln 3$ **41.** $\dfrac{\pi}{2}(e^4 - 1)$

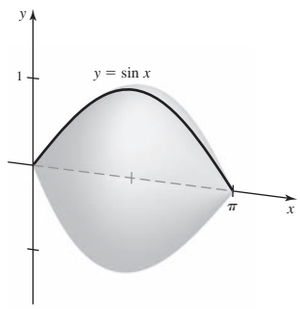
**43.** $\dfrac{49\pi}{2}$ **45.** Volumes are equal. **47.** $x$-axis **49.** $\dfrac{\pi}{2}$

**51.** $\pi\sqrt{3}$ **53.** $\dfrac{\pi}{6}$ **55.** $2\pi(8 + \pi)$ **57.** $(6\sqrt{3} - 2\pi)\pi$

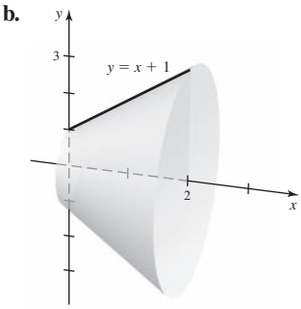
**59.** $4\pi$ **61. a.** False **b.** True **c.** True

**63.** Volume $(S) = 8\pi a^{5/2}/15$; volume $(T) = \pi a^{5/2}/3$

**65. a.**




**b.**




**67.** Left: $166\pi$; right: $309\pi$; midpoint: $219\pi$ **69. a.** $\frac{1}{3} V_C$ **b.** $\frac{2}{3} V_C$

**71.** $24\pi^2$ **73. b.** $V = \pi r^2 h$

## Section 6.4 Exercises, pp. 447–451

**1.** $\displaystyle\int_a^b 2\pi x(f(x) - g(x))\,dx$ **3.** $x$; $y$ **5. a.** $x$ **b.** $2 - x^2 - x$

**c.** $\displaystyle\int_0^1 2\pi x(2 - x^2 - x)\,dx$ **7. a.** $2 - y$ **b.** $4 - (2-y)^2 = 4y - y^2$

**c.** $\displaystyle\int_0^2 2\pi(2-y)(4y - y^2)\,dy$ **9.** $\dfrac{\pi}{6}$ **11.** $\pi$ **13.** $8\pi$ **15.** $\dfrac{32\pi}{3}$

**17.** $\pi$ **19.** $\dfrac{\pi}{2}$ **21.** $\dfrac{81\pi}{2}$ **23.** $\dfrac{2\pi}{3}$ **25.** $\dfrac{3\pi}{10}$ **27.** $90\pi$

**29.** $2\pi e(e-1)$ **31.** $\pi$ **33.** $\dfrac{\pi}{5}$ **35.** $\dfrac{4\pi}{15}$ **37.** $500\pi$

**39.** $\dfrac{11\pi}{6}$ **41.** $\dfrac{5\pi}{6}$ **43.** $\dfrac{23\pi}{15}$ **45.** $\dfrac{52\pi}{15}$ **47.** $\dfrac{36\pi}{5}$

**51. a.** $4\pi\displaystyle\int_1^5 x\sqrt{4 - (x-3)^2}\,dx$ **b.** $12\pi\displaystyle\int_{-2}^2 \sqrt{4 - y^2}\,dy$

**c.** $24\pi^2$ **53.** $\dfrac{\pi}{9}$ **55.** $\dfrac{16\pi}{3}$ **57.** $\dfrac{608\pi}{3}$ **59.** $\pi(\sqrt{e} - 1)^2$

**61.** $\dfrac{5\pi}{6}$ **63. a.** True **b.** False **c.** True **65.** $24\pi$ **67.** $54\pi$

**69. a.** $V_1 = \dfrac{\pi}{15}(3a^2 + 10a + 15)$; $V_2 = \dfrac{\pi}{2}(a+2)$

**b.** $V(S_1) = V(S_2)$, for $a = 0$ and $a = -\frac{5}{6}$ **71.** $10\pi$

**73. a.** $27\sqrt{3}\pi r^3/8$ **b.** $54\sqrt{2}/(3 + \sqrt{2})^3$ **c.** $500\pi/3$

## Section 6.5 Exercises, pp. 455–457

**1.** Determine whether $f$ has a continuous derivative on $[a, b]$. If so, calculate $f'(x)$ and evaluate the integral $\displaystyle\int_a^b \sqrt{1 + f'(x)^2}\,dx$.

**3.** $\displaystyle\int_{-2}^5 \sqrt{1 + 9x^4}\,dx$ **5.** $\displaystyle\int_0^2 \sqrt{1 + 4e^{-4x}}\,dx$ **7.** $4\sqrt{5}$

**9.** $8\sqrt{65}$ **11.** 168 **13.** $\frac{4}{3}$ **15.** $\frac{123}{32}$ **17.** $\frac{123}{32}$ **19.** $7\sqrt{5}$

**21. a.** $\displaystyle\int_{-1}^1 \sqrt{1 + 4x^2}\,dx$ **b.** 2.96 **23. a.** $\displaystyle\int_1^4 \sqrt{1 + \frac{1}{x^2}}\,dx$ **b.** 3.34

**25. a.** $\displaystyle\int_3^4 \sqrt{\frac{4y-7}{4y-8}}\,dy$ **b.** 1.08 **27. a.** $\displaystyle\int_0^\pi \sqrt{1 + 4\sin^2 2x}\,dx$

**b.** 5.27 **29. a.** $\displaystyle\int_1^{10} \sqrt{1 + 1/x^4}\,dx$ **b.** 9.15

**31.** Approx. 1326 m **33. a.** False **b.** True **c.** False

**35. a.** $f(x) = \pm 4x^3/3 + C$ **b.** $f(x) = \pm 3\sin 2x + C$

**37.** $y = 1 - x^2$ **39. a.** $L/2$ **b.** $L/c$

## Section 6.6 Exercises, pp. 463–465

**1.** $15\pi$ **3.** Evaluate $\displaystyle\int_a^b 2\pi f(x)\sqrt{1 + f'(x)^2}\,dx$ **5. a.** $4\sqrt{2}\pi$

**7.** $156\sqrt{10}\pi$ **9.** $\dfrac{2912\pi}{3}$ **11.** $\dfrac{\pi}{9}(17^{3/2} - 1)$ **13.** $2\pi$

**15.** $15\sqrt{17}\,\pi$ **17.** $\dfrac{\pi}{8}(16 + e^8 - e^{-8})$ **19.** $96\pi$

**21.** $\dfrac{9\pi}{125}\,\text{m}^3$ **23. a.** False **b.** False **c.** True **d.** False

**25. a.** $\displaystyle\int_0^{\pi/2} 2\pi(\cos x)\sqrt{1 + \sin^2 x}\,dx$ **b.** Approx. 7.21

**27. a.** $\displaystyle\int_0^{\pi/4} 2\pi(\tan x)\sqrt{1 + \sec^4 x}\,dx$ **b.** Approx. 3.84

**29.** $\dfrac{12\pi a^2}{5}$ **31.** $\dfrac{53\pi}{9}$ **33.** $\dfrac{275\pi}{32}$ **35.** $\dfrac{48{,}143\pi}{48}$ **39. a.** $\dfrac{6}{a}$ **b.** $\dfrac{3}{a}$

**c.** $\dfrac{3}{2a} + \dfrac{3a}{2\sqrt{a^2-1}}\sin^{-1}\left(\dfrac{\sqrt{a^2-1}}{a}\right)$ **d.** The sphere **e.** A sphere

**41. a.** $c^2 A$ **b.** $A$

## Section 6.7 Exercises, pp. 473–477

**1.** 150 g **3.** 25 J **5.** Horizontal cross sections of water at various locations in the tank are lifted different distances. **7.** $39{,}200\ \text{N/m}^2$

**9.** $\displaystyle\int_5^{10} 25\pi\rho g(15 - y)\,dy$ **11.** $\displaystyle\int_0^{10} 25\pi\rho g(10 - y)\,dy$ **13.** $\pi + 2$

**15.** 3 **17.** $(2\sqrt{2} - 1)/3$ **19.** 10 **21.** 9 J **23. a.** $k = 150$

**b.** 12 J **c.** 6.75 J **d.** 9 J **25. a.** 112.5 J **b.** 12.5 J

**27. a.** 31.25 J **b.** 312.5 J **29. a.** 625 J **b.** 391 J
**31. a.** 22,050 J **b.** 36,750 J **33.** 3675 J **35.** $1.15 \times 10^7$ J
**37** $3.94 \times 10^6$ J **39. a.** $66{,}150\pi$ J **b.** No **41. a.** $2.10 \times 10^8$ J
**b.** $3.78 \times 10^8$ J **43. a.** 32,667 J **b.** Yes **45.** $7.70 \times 10^3$ J
**47.** $1.47 \times 10^7$ N **49.** $2.94 \times 10^7$ N **51.** 6533 N **53.** 6737.5 N
**55.** $8 \times 10^5$ N **57. a.** True **b.** True **c.** True **d.** False
**59. a.** Compared to a linear spring, $F(x) = 16x$, the restoring force is less for large displacements. **b.** 17.87 J **c.** 31.6 J **61.** 1,381,800 J
**63.** 0.28 J **65. a.** Yes **b.** 4.296 m **67.** Left: 16,730 N; right: 14,700 N **69. a.** $8.87 \times 10^9$ J
**b.** $500\,GMx/(R(x+R)) = (2 \times 10^{17})x/(R(x+R))$ J
**c.** $GMm/R$ **d.** $v = \sqrt{2GM/R}$

### Chapter 6 Review Exercises, pp. 478–482

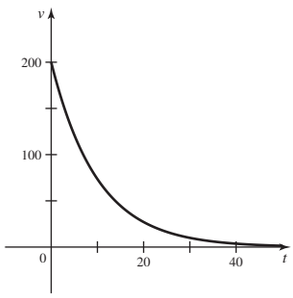
**1. a.** True **b.** True **c.** True **3. a.** Positive direction for $0 \le t < \frac{1}{2}$ and $2 < t \le 3$; negative direction for $\frac{1}{2} < t < 2$
**b.** 9 m **c.** 22.5 m **d.** $s(t) = 4t^3 - 15t^2 + 12t + 1$
**5.** $s(t) = 20t - 5t^2$; displacement $= 20t - 5t^2$;

$$D(t) = \begin{cases} 20t - 5t^2 & \text{if } 0 \le t < 2 \\ 5t^2 - 20t + 40 & \text{if } 2 \le t \le 4 \end{cases}$$

**7. a.** $v(t) = -\dfrac{8}{\pi}\cos\dfrac{\pi t}{4}$; $s(t) = -\dfrac{32}{\pi^2}\sin\dfrac{\pi t}{4}$ **b.** Min value $= -\dfrac{32}{\pi^2}$; max value $= \dfrac{32}{\pi^2}$ **c.** 0; 0 **9. a.** $R(t) = 3t^{4/3}$

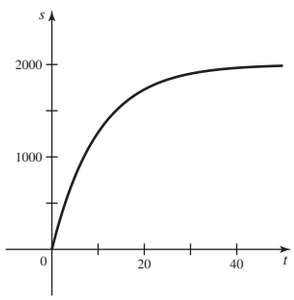
**b.** $R(t) = \begin{cases} 3t^{4/3} & \text{if } 0 \le t \le 8 \\ 2t + 32 & \text{if } t > 8 \end{cases}$ **c.** $t = 59$ min

**11. a.**

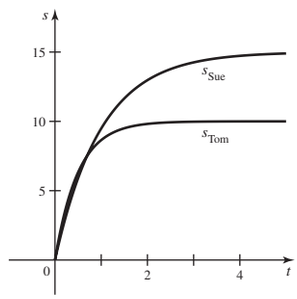



**b.** $10 \ln 4 \approx 13.86$ s

**c.** $s(t) = 2000(1 - e^{-t/10})$ **d.** No




**13. a.** $s_{\text{Tom}}(t) = -10e^{-2t} + 10$
$s_{\text{Sue}}(t) = -15e^{-t} + 15$




**b.** $t = 0$ and $t = \ln 2$ **c.** Sue **15.** $1 - \dfrac{\pi}{4}$ **17.** $e - 2$ **19.** $\dfrac{7}{3}$
**21.** 8 **23.** 1 **25.** $\dfrac{1}{3}$ **27.** $R_1$: $\dfrac{7}{6}$; $R_2$: $\dfrac{10}{3}$; $R_3$: $4\sqrt{3} - \dfrac{10}{3}$ **29.** $\dfrac{11\pi}{15}$
**31.** $\dfrac{14\pi}{3}$ **33.** $\displaystyle\int_1^3 2\pi(3-x)(2\sqrt{x} - 3 + x)\,dx$ **35.** $\dfrac{7}{3}$ **37.** $\dfrac{31\pi}{5}$
**39.** $R_1$: $\sqrt{3}$; $R_2$: $\dfrac{4\pi}{3} - \sqrt{3}$ **41.** $\dfrac{1}{3}$ **43.** $\dfrac{5}{6}$ **45.** $\dfrac{8}{15}$ **47.** $\dfrac{8\pi}{5}$
**49.** $\pi(e-1)^2$ **51.** $\pi$ **53.** $\dfrac{512\pi}{15}$ **55.** About $y = -2$: $80\pi$; about $x = -2$: $112\pi$ **57.** $c = 5$ **59.** 1 **61.** $2\sqrt{3} - \dfrac{4}{3}$
**63.** $\displaystyle\int_2^4 \sqrt{4x^2 + 8x + 5}\,dx \approx 16.127$
**65.** $\sqrt{b^2+1} - \sqrt{2} + \ln\left(\dfrac{(\sqrt{b^2+1} - 1)(1+\sqrt{2})}{b}\right)$; $b \approx 2.715$
**67. a.** $9\pi$ **b.** $\dfrac{9\pi}{2}$ **69. a.** $\dfrac{263{,}439\pi}{4096}$ **b.** $\dfrac{483}{64}$ **c.** $\dfrac{\pi}{8}(84 + \ln 2)$
**d.** $\dfrac{264{,}341\pi}{18{,}432}$ **71.** $\left(450 - \dfrac{450}{e}\right)$ g **73. a.** 562.5 J **b.** 56.25 J
**75. a.** 980 J **b.** 627.2 J **77. a.** 1,411,200 J **b.** 940,800 J
**79. a.** 1,477,805 J **b.** The work required to pump out the top 3 m of water is 1,015,991 J, and the work required to pump out the bottom 3 m of water is 461,814 J. More work is required to pump out the top 3 m of water. **81.** 4,987,592 J **83.** 5716.7 N **85.** $5.2 \times 10^7$ N

## CHAPTER 7

### Section 7.1 Exercises, pp. 490–492

**1.** $D = (0, \infty), R = (-\infty, \infty)$ **3.** $\dfrac{4^x}{\ln 4} + C$
**5.** $e^{x \ln 3}, e^{\pi \ln x}, e^{(\sin x)(\ln x)}$ **7.** $3(\ln x + 1)$ **9.** $\dfrac{\cos(\ln x)}{x}, x > 0$
**11.** $-\dfrac{5}{x(\ln 2x)^6}$ **13.** $4^{2x+1}x^{4x}(1 + \ln 2x)$ **15.** $(\ln 2)\,2^{x^2+1}x$
**17.** $2(x+1)^{2x}\left(\dfrac{x}{x+1} + \ln(x+1)\right)$
**19.** $y^{\sin y}\left(\cos y \ln y + \dfrac{\sin y}{y}\right)$ **21.** $-20xe^{-10x^2}$ **23.** $x^{2x}(2\ln x + 2)$
**25.** $-(1/x)^x(1 + \ln x)$ **27.** $\left(-\dfrac{4}{x+4} + \ln\left(\dfrac{x+4}{x}\right)\right)\left(1 + \dfrac{4}{x}\right)^x$
**29.** $6(1 - \ln 2)$ **31.** $\dfrac{3}{8}$ **33.** $\dfrac{1}{2}\ln(4 + e^{2x}) + C$ **35.** $\dfrac{1}{\ln 2} - \dfrac{1}{\ln 3}$
**37.** $4 - \dfrac{4}{e^2}$ **39.** $2e^{\sqrt{x}} + C$ **41.** $\ln|e^x - e^{-x}| + C$ **43.** $\dfrac{99}{10 \ln 10}$
**45.** 3 **47.** $\dfrac{6^{x^3+8}}{3 \ln 6} + C$ **49.** $\dfrac{1}{6}e^{3x^2+1} + C$ **51.** $-\dfrac{1}{9^x \ln 9} + C$
**53.** $\dfrac{10^{x^3}}{3 \ln 10} + C$ **55.** $\dfrac{3 \cdot 3^{\ln 2} - 1}{\ln 3}$ **57.** $\dfrac{32}{3}$ **59.** $\dfrac{1}{3}\ln\dfrac{65}{16}$
**61.** $2e^{5+\sqrt{x}} + C$ **63.**

| $h$ | $(1+2h)^{1/h}$ | $h$ | $(1+2h)^{1/h}$ |
|---|---|---|---|
| $10^{-1}$ | 6.1917 | $-10^{-1}$ | 9.3132 |
| $10^{-2}$ | 7.2446 | $-10^{-2}$ | 7.5404 |
| $10^{-3}$ | 7.3743 | $-10^{-3}$ | 7.4039 |
| $10^{-4}$ | 7.3876 | $-10^{-4}$ | 7.3905 |
| $10^{-5}$ | 7.3889 | $-10^{-5}$ | 7.3892 |
| $10^{-6}$ | 7.3890 | $-10^{-6}$ | 7.3891 |

$\lim_{h \to 0}(1+2h)^{1/h} = e^2$