

A-8 ANSWERS

61.  $\frac{60x}{x^2 - 16}$  62.  $\frac{130x}{x^2 - 144}$  63.  $2L + \frac{60}{L}$  64.  $\frac{600}{L}$  65.  $\frac{2r - 15}{2}$  66. 18 hours  
 67. a.  $5.72674 \times 10^7$ ,  $6.1 \times 10^9$  b.  $1.06 \times 10^2$  persons per square mile  
 68. a.  $9.2956 \times 10^7$ ,  $1.86 \times 10^5$  b. 499.76 seconds or 8.33 minutes  
 69.  $x - 1 + \frac{-2x + 3}{x^2 - x + 2}$  70.  $x^2 - 5 + \frac{18}{x^2 + 4}$  71.  $\frac{13}{10}$  72.  $\frac{3x - 7y}{2(x + y)}$  73. 2  
 74.  $2b^2$  75.  $\frac{1}{x^3y^4}$  76.  $\frac{1}{x^5y^{14}}$  77.  $\frac{-(3x + 2)(x + 2)}{(x + 1)^3}$  78.  $\frac{2(2x^2 - 9x + 24)}{(x + 2)^2(x - 3)}$

- Exercise 3.1** [page 107] 1. 11 3. -3 5. Not real 7.  $-\frac{2}{3}$  9.  $\frac{2}{3}$  11.  $\frac{2}{9}$

13. 3 15. Not real 17. -2 19. -2 21.  $-\frac{1}{2}$  23.  $\frac{5}{8}$  25.  $\sqrt{3}$  27.  $4\sqrt[3]{x}$

29.  $\sqrt[3]{4x}$  31.  $\frac{1}{\sqrt[4]{8}}$  33.  $\frac{3}{\sqrt[3]{xy}}$  35.  $\sqrt[4]{x - 2}$  37.  $7^{1/2}$  39.  $(2x)^{1/3}$  41.  $3(6)^{-1/4}$

43.  $5x^{1/3}(yz)^{-1/4}$  45.  $x^{1/3} - 3y^{1/2}$  47.  $(x - 2y)^{-1/3}$  49. 0.375; terminates

51.  $0.8\bar{3}$ ; repeats a pattern 53.  $0.\overline{285714}$ ; repeats a pattern 55.  $3.\overline{90}$ ; repeats a pattern

57. 1.414 59. 4.217 61. -2.122 63. 1.125 65. 125 67. 2 69. -8

71.  $x$  73.  $12 < \sqrt{175} < 13$  75.  $7 < \sqrt[3]{423} < 8$  77.  $-5 < \sqrt[3]{-84.6} < -4$

79.  $3 < \sqrt[4]{129} < 4$

81. a. 13 inches b. 3.873 feet c. 1.414 miles d. 0.48 centimeter

83. a. 12 millimeters b. 7.368063 yards c. 3.849 feet d. 2.5 inches

85. 2.22 seconds 87. 16 feet 89. a. 24,997.76 miles per hour b. 9,707.36 miles per hour

91. 0.283 centimeter 93.  $16^{1/2}$ ;  $a^{1/m} > a^{1/n}$

95. 1.41421, 1.25992, 1.18921, 1.07177, 1.00696, 1.00069;  $2^{1/n}$  approaches 1 as  $n$  gets very large.

97.  $x^{1/4} = (x^{1/2})^{1/2}$

- Exercise 3.2** [page 115] 1. 27 3. 16 5.  $\frac{1}{4}$  7.  $\frac{1}{625}$  9.  $-\frac{27}{125}$  11.  $\frac{16}{25}$

13.  $\sqrt{x^4}$  15.  $3\sqrt{x^2}$  17.  $\frac{1}{\sqrt[6]{y^5}}$  19.  $\frac{1}{\sqrt[3]{(xy)^2}}$  21.  $\frac{3}{\sqrt[3]{y^2}}$  23.  $-2\sqrt[4]{xy^3}$

25.  $6\sqrt{(x + 2y)^3}$  27.  $\frac{1}{\sqrt{(x^2 - 4)^5}}$  29.  $x^{2/3}$  31.  $(ab)^{2/3}$  33.  $2a^{1/5}b^{3/5}$

35.  $-4x^{-3/4}y$  37.  $-(a^2 + b)^{3/4}$  39.  $5^{-1/5}ab(a - b^2)^{-2/5}$  41. 8 43.  $-\frac{81}{16}$  45.  $2y^3$

47.  $-a^4b^8$  49.  $-\frac{2}{5}x^3y^9$  51.  $-3a^2b^3$  53. 7.931 55. -10.903 57. 0.089

59. 35.142 61.  $2x^{7/4}$  63.  $\frac{x^{2/3}y}{3}$  65.  $2x$  67.  $\frac{9}{y^{1/3}}$  69.  $\frac{a^6b^{1/2}}{8}$  71.  $\frac{1}{a^{0.3}b^{1.95}}$