

pg. 382 # 3-63 x3

$$3. 49^{1/2} = \sqrt{49} = 7$$

$$12. x^{2/3} = \sqrt[3]{x^2} \text{ or } (\sqrt[3]{x})^2$$

$$18. \sqrt{-10} = (-10)^{1/2}$$

$$27. h = \frac{0.00252d^{2.27}}{e}$$

$$h = \frac{0.00252(50)^{2.27}}{1.2}$$

$$h = 15.1 \text{ m}$$

$$30. 8^{2/3} = (\sqrt[3]{8})^2 = 2^2 = 4$$

$$\text{or } \sqrt[3]{8^2} = \sqrt[3]{64} = 4$$

$$39. (x^{-4/7})^7 = x^{-4} = \frac{1}{x^4}$$

$$52. 32^{1.2} = 32^{6/5} = \sqrt[5]{32^6} = 2^6 = 64$$

$$63. (.036(46 \times 10^4))^{3/4}$$

$$(.036 \cdot 46)^{3/4} \times 10^3$$

$$1.46 \times 10^3$$

**Answers for Lesson 7-4, pp. 382–384 Exercises**

- |  |  |  |
|--|--|--|
| 1. 6                                     | 2. 3   | 3. 7   |
| 4. 10                                    | 5. -3  | 6. 6   |
| 7. 8                                     | 8. 3   | 9. 3   |
| 10. $\sqrt[6]{x}$                        | 11. $\sqrt[5]{x}$  | 12. $\sqrt[7]{x^2}$ or $(\sqrt[7]{x})^2$   |
| 13. $\sqrt[5]{y^2}$ or $(\sqrt[5]{y})^2$ | 14. $\frac{1}{\sqrt[8]{y^9}}$ or $\frac{1}{(\sqrt[8]{y})^9}$ | 15. $\frac{1}{\sqrt[4]{t^3}}$ or $\frac{1}{(\sqrt[4]{t})^3} = \frac{\sqrt[4]{t}}{t}$ |
| 16. $\sqrt{x^3}$ or $(\sqrt{x})^3$       | 17. $\sqrt[5]{y^6}$ or $(\sqrt[5]{y})^6$                     | 18. $(-10)^{\frac{1}{2}}$  |
| 19. $7^{\frac{1}{2}}x^{\frac{3}{2}}$     | 20. $(7x)^{\frac{3}{2}}$                                     | 21. $(7x)^{\frac{3}{2}}$   |
| 22. $a^{\frac{2}{3}}$                    | 23. $a^{\frac{2}{3}}$  | 24. $c^{\frac{1}{2}}$  |
| 25. $25x^2y^2$                           | 26. $\approx 72.8$ m   | 27. $\approx 15.1$ m   |
| 28. $\approx 7.9$ m                      | 29. $\approx 1.6$ m  | 30. 4  |
| 31. 16                                   | 32. 4  | 33. 64   |
| 34. $\frac{1}{16}$                       | 35. 8  | 36. 64   |
| 37. 1000                                 | 38. $\frac{1}{x^2}$  | 39. $\frac{1}{x^4}$  |
| 40. $\frac{1}{3x^{\frac{2}{3}}}$         | 41. $\frac{5}{x^{\frac{2}{3}}}$                              | 42. $-\frac{3}{x^3}$   |
| 43. $-2y^3$                              | 44. $\frac{1}{x}$  | 45. $x^{\frac{13}{3}}$   |
| 46. $\frac{y^4}{x^3}$                    | 47. $\frac{y^2}{x^8}$  | 48. $x^3y^9$   |
| 49. $\frac{y^5}{x^{10}}$                 | 50. -7   | 51. -3   |
| 52. 64                                   | 53. 729  | 54. 2,097,152  |
| 55. 1,000,000,000 or $10^9$              |  | 56. $\frac{1}{4}$  |
| 57. $\frac{1}{8}$                        | 58. $\frac{1}{36}$   | 59. 16   |

**Answers for Lesson 7-4, pp. 382–384 Exercises (cont.)**

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60.  $-\frac{1}{81}$

61. 10

62. 78%, 61%, 37%

63. 635.87

64. 768

65.  $x^{\frac{1}{2}}$

66.  $y^{\frac{4}{5}}$

67.  $x^{\frac{1}{2}}$

68.  $y^{\frac{1}{2}}$

69.  $x^{\frac{1}{6}}y^{\frac{1}{4}}$

70.  $\frac{1}{x^4y^{\frac{5}{6}}}$

71.  $\frac{4x^7}{9y^9}$

72.  $\frac{9y^8}{4x^6}$

73.  $\frac{1}{x^{\frac{13}{36}}}$

74.  $\frac{1}{x^{\frac{7}{24}}}$

75.  $\frac{1}{x^{\frac{1}{3}}}$

76.  $\frac{1}{(xy)^{\frac{1}{2}}}$

77. The cube root of  $-64$  is  $-4$ , which equals  $-(64)^{\frac{1}{3}}$ .  
The square root of  $-64$  is not a real number, but  
 $-(64)^{\frac{1}{2}} = -\sqrt{64} = -8$ .

78. The exponent  $\frac{1}{2}$  applies only to the 5, not to the 25.

79. a. Answers may vary. Sample:  $4 - 5^{\frac{1}{2}}$ ,  $2(4 - 5^{\frac{1}{2}})$ ,  $\frac{4 - 5^{\frac{1}{2}}}{2}$

b. no

80. a.  $\sqrt{x} \cdot \sqrt{x} \cdot \sqrt{x} \cdot \sqrt{x} = x \cdot x = x^2$ , so  $\sqrt[4]{x^2} = \sqrt{x}$

b.  $\sqrt[4]{x^2} = (x^2)^{\frac{1}{4}} = x^{\frac{2}{4}} = x^{\frac{1}{2}} = \sqrt{x}$

81. 49

82. 9

83.  $x^{2\pi}$

84. 1

85.  $3\sqrt{2}$

86. 9

87. 33.13 mph

88. B

89. H

90. [2]  $x = \frac{1}{16}$

[1] minor error