

Answers for 6.2

For use with pages 424–427

6.2 Skill Practice

1. No; they do not have the same index.
2. If the radicand has no perfect n th powers as factors and any denominator has been rationalized.
3. 25 4. $6^{1/3}$ 5. 3
6. $9^{9/5}$ 7. $2 \cdot 5^{1/2}$ 8. $\frac{4}{7}$
9. $\frac{\sqrt[5]{1331}}{11}$ 10. 884,736
11. $7^{3/4}$ 12. $8 \cdot 2^{1/6}$
13. $\frac{3\sqrt[3]{50}}{16,000}$ 14. $\frac{\sqrt[7]{371,293}}{13}$
15. 10 16. 4 17. $2\sqrt{2}$
18. 2187 19. 2 20. $\frac{1}{5}$
21. 3 22. $\frac{2\sqrt[8]{69,984}}{3}$
23. C 24. $6\sqrt{2}$
25. $2\sqrt[3]{2}$ 26. $6\sqrt[3]{2}$
27. $40\sqrt[4]{2}$ 28. $\frac{\sqrt[3]{36}}{6}$
29. $\frac{\sqrt{3}}{2}$ 30. $\frac{\sqrt[3]{36}}{2}$
31. $\sqrt[15]{3}$ 32. $9\sqrt[6]{3}$
33. $7\sqrt[3]{5}$ 34. $10\sqrt[5]{2}$

35. $12\sqrt[4]{7}$ 36. $26\sqrt[3]{5}$
37. $-2\sqrt[7]{2}$ 38. $-16\sqrt[4]{2}$
39. $-6\sqrt[4]{2}$ 40. $5\sqrt[3]{6}$
41. The radicands are not the same, so they cannot be combined;
 $2\sqrt[3]{10} + 6\sqrt[3]{5}$.
42. The numerator must also be multiplied by y ;
$$\sqrt[3]{\frac{x \cdot y}{y^2 \cdot y}} = \sqrt[3]{\frac{xy}{y^3}} = \frac{\sqrt[3]{xy}}{y}$$
43. $x^{7/12}$ 44. $y^{2/3}$ 45. $3x$
46. $2x^{3/2}$ 47. $\frac{y^{4/3}}{x^{3/5}}$ 48. $\frac{x^5}{y^2}$
49. $\frac{1}{x^4}$ 50. $\frac{1}{5x^5\sqrt[6]{x}}$
51. Sample answer: $\frac{x}{\sqrt[4]{x}}, \frac{\sqrt[4]{x^{11}}}{x^2}$
52. $7x^2\sqrt{x}$ 53. $yz^3\sqrt[4]{12x^2y^2}$
54. $2xy^2\sqrt[3]{6y}$ 55. $x^2z^4\sqrt{xy}$
56. $\frac{-3\sqrt[5]{x^4}}{x^2}$ 57. $\frac{x\sqrt[3]{y^2}}{y^2}$
58. $\frac{2xy\sqrt{5z}}{3z^2}$ 59. $\sqrt[14]{x^{11}}$
60. $12\sqrt[5]{x}$ 61. $\frac{1}{2}y^{3/2}$
62. $9\sqrt[3]{y}$ 63. $2x^2y^{1/2}$
64. $x^2\sqrt{x}$

Answers for 6.2 *continued*
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65. $(2xy + 3y)\sqrt[4]{2x^2}$

66. perimeter: $2x^3 + 4x^{2/3}$,
area: $2x^{11/3}$

67. perimeter: $24x^{1/4}$, area: $35x^{1/2}$

68. perimeter: $12x^{1/3}$, area: $6x^{2/3}$

69. C

70. $x^{2.5}$

71. $\frac{1}{y^{6.6}}$

72. $\frac{1}{x^{4.5}y^{1.5}}$

73. $\frac{1}{x^{1.2}}$

74. $\frac{y^{0.75}}{x^{1.25}}$

75. $\frac{1}{y^{1.3}}$

76. $26x^{0.6}$

77. $7z^{0.3}$

78. $x^{\sqrt[3]{3}}$

79. $x^{\sqrt[6]{6}}$

80. $x^{4\pi/3}$

81. $4x^2y^{\sqrt{2}}$

82. a. -2

b. -2.5

c. $-3, 1$

6.2 Problem Solving

83. a. about 580 cm²

b. about 16,671 cm²

84. about 444 ft/sec

85. about 0.45 mm

86. If h is the hypotenuse, then
 $x^2 + x^2 = h^2$, $2x^2 = h^2$, $h = x\sqrt{2}$.

87. a. about 2 times fainter

b. about 1.6 times fainter

c. about 3 times fainter

88. $d = \frac{v_0^2}{g}$

89. a. $r = \sqrt[3]{\frac{3V}{4\pi}}$

b. $S = 4\pi\left(\sqrt[3]{\frac{3V}{4\pi}}\right)^2 = 4\pi\left(\frac{3V}{4\pi}\right)^{2/3}$
 $= \frac{4\pi(3V)^{2/3}}{(4\pi)^{2/3}}$
 $= (4\pi)^{1/3}(3V)^{2/3}$

c. The balloon with twice as much water will have $\sqrt[3]{4}$, or about 1.59, times the surface area of the balloon with less water.

90. If m is odd and n is even.

6.2 Mixed Review

91. $x \geq 22$

92. $x < \frac{1}{7}$

93. $x \leq -2\frac{2}{9}$

94. $x < -5$ or $x > -2$

95. $-4 \leq x \leq 8$

96. $-1\frac{1}{2} < x < 1\frac{1}{3}$

Answers for 6.2 *continued*

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97. 3

98. -45

99. 67

100. -95

101. $8x^3 + 7x^2 + 11x$

102. $35x^3 - 15x^2 + 7x + 6$

103. $18x^3 + 72x^2$

104. $64x^2 - 48x + 9$

105. $x^3 - x^2 - 10x - 8$

106. $x^2 + 4x + 5$