R.8 Concepts and Vocabulary *(page 75)*

1. index **2.** cube root **3.** True **4.** False

R.8 Exercises *(page 75)*

5. 3 **6.** 2 **7.** -2 **8.** -1 **9.** $2\sqrt{2}$ **10.** $3\sqrt[3]{2}$ **11.** $-2x\sqrt[3]{2}$ **12.** $2x\sqrt[4]{3x}$ **13.** x^3y^2 **14.** x^2y **15.** x^2y **16.** $\frac{1}{3x}$ **17.** $6\sqrt{x}$

18. $3x^2\sqrt{x}$ **19.** $6x\sqrt{x}$ **20.** $10x^2$ **21.** $15\sqrt[3]{3}$ **22.** $300\sqrt[3]{3}$ **23.** $12\sqrt{3}$ **24.** $-30\sqrt{6}$ **25.** $7\sqrt{2}$ **26.** $2\sqrt{5}$ **27.** $\sqrt{2}$ **28.** $-5\sqrt{3}$

29. $2\sqrt{3}$ **30.** $-1+\sqrt{5}$ **31.** $-\sqrt[3]{2}$ **32.** $15\sqrt[3]{3}$ **33.** $x-2\sqrt{x}+1$ **34.** $x+2\sqrt{5x}+5$ **35.** $(2x-1)\sqrt[3]{2x}$ **36.** $(x+2)\sqrt[4]{2x}$

37. $(2x-15)\sqrt{2x}$ **38.** $(9x+20)\sqrt{y}$ **39.** $-(x+5y)\sqrt[3]{2xy}$ **40.** $5xy$ **41.** $\frac{\sqrt{2}}{2}$ **42.** $\frac{2\sqrt{3}}{3}$ **43.** $-\frac{\sqrt{15}}{5}$ **44.** $-\frac{\sqrt{6}}{4}$ **45.** $\frac{(5+\sqrt{2})\sqrt{3}}{23}$

46. $\frac{(\sqrt{7}-2)\sqrt{2}}{3}$ **47.** $-\frac{19+8\sqrt{5}}{41}$ **48.** $\frac{9-5\sqrt{3}}{3}$ **49.** $\frac{5\sqrt[3]{4}}{2}$ **50.** $-\frac{2\sqrt[3]{3}}{3}$ **51.** $\frac{2x+h-2\sqrt{x}\sqrt{x+h}}{h}$

52. $\frac{x+\sqrt{x+h}\sqrt{x-h}}{h}$ **53.** 4 **54.** 8 **55.** -3 **56.** 8 **57.** 64 **58.** 125 **59.** $\frac{1}{27}$ **60.** $\frac{1}{64}$ **61.** $\frac{27\sqrt{2}}{32}$ **62.** $\frac{9}{4}$ **63.** $\frac{27\sqrt{2}}{32}$

64. $\frac{9}{4}$ **65.** $x^{7/12}$ **66.** $x^{11/12}$ **67.** xy^2 **68.** x^3y^6 **69.** $x^{4/3}y^{5/3}$ **70.** $x^{5/4}y^{5/4}$ **71.** $\frac{8x^{3/2}}{y^{1/4}}$ **72.** $\frac{8y^{1/2}}{x^{3/2}}$ **73.** $\frac{3x+2}{(1+x)^{1/2}}$ **74.** $\frac{3x+1}{2x^{1/2}}$

75. $\frac{x(3x^2+2)}{(x^2+1)^{1/2}}$ **76.** $\frac{4x+3}{3(x+1)^{2/3}}$ **77.** $\frac{22x+5}{10\sqrt{x-5}\sqrt{4x+3}}$ **78.** $\frac{65x+6}{24\sqrt[3]{(x-2)^2}\sqrt[3]{(8x+1)^2}}$ **79.** $\frac{2+x}{2(1+x)^{3/2}}$ **80.** $\frac{1}{(x^2+1)^{3/2}}$

81. $\frac{4-x}{(x+4)^{3/2}}$ **82.** $\frac{9}{(9-x^2)^{3/2}}$ **83.** $\frac{1}{x^2(x^2-1)^{1/2}}$ **84.** $\frac{4}{(x^2+4)^{3/2}}$ **85.** $\frac{1-3x^2}{2\sqrt{x}(1+x^2)^2}$ **86.** $\frac{6x-4x^3}{3(1-x^2)^{4/3}}$ **87.** $\frac{1}{2}(5x+2)(x+1)^{1/2}$

88. $\frac{1}{3}(x^2+4)^{1/3}(11x^2+12)$ **89.** $2x^{1/2}(3x-4)(x+1)$ **90.** $2x^{1/2}(10x+9)$ **91.** $(x^2+4)^{1/3}(11x^2+12)$ **92.** $2x(3x+4)^{1/3}(5x+4)$

93. $(3x+5)^{1/3}(2x+3)^{1/2}(17x+27)$ **94.** $12(6x+1)^{1/3}(4x-3)^{1/2}(5x-1)$ **95.** $\frac{3(x+2)}{2x^{1/2}}$ **96.** $\frac{4(2x-1)}{x^{2/3}}$

97. **(a)** 15,660.4 gal **(b)** 390.7 gal **98.** **(a)** 16 ft/sec **(b)** 32 ft/sec **(c)** 12 ft/sec **99.** $2\sqrt{2}\pi \approx 8.89$ sec **100.** $\pi\sqrt{2} \approx 4.44$ sec

101. $\frac{\pi\sqrt{3}}{6} \approx 0.91$ sec **102.** $\frac{\pi\sqrt{6}}{12} \approx 0.64$ sec