

Taken from § 7.5 in the text.

1. What is a good first step for solving $\sqrt{4x - 1} = 5$?
3. Can an equation involving rational exponents have more than one solution? Explain.

In exercises 17 - 67 odd, solve the equation symbolically. Check every 4th problem.

17. $\sqrt{x} = 8$

19. $\sqrt[4]{x} = 3$

21. $\sqrt{2t + 4} = 4$

23. $\sqrt{x + 1} - 3 = 4$

25. $2\sqrt{x - 2} + 1 = 5$

27. $\sqrt{x + 6} = x$

29. $\sqrt[3]{x} = 3$

31. $\sqrt[3]{2z - 4} = -2$

$$33. \sqrt[4]{t+1} = 2$$

$$35. \sqrt{5z-1} = \sqrt{z+1}$$

$$37. \sqrt{1-x} = 1-x$$

$$39. \sqrt{b^2-4} = b-2$$

$$41. \sqrt{1-2x} = x+7$$

$$43. \sqrt{x} = \sqrt{x-5} + 1$$

$$45. \sqrt{2t-2} + \sqrt{t} = 7$$

$$47. x^2 = 49$$

$$49. 2z^2 = 200$$

$$51. (t+1)^2 = 100$$

$$53. (4-2x)^2 = 100$$

$$55. b^3 = 64$$

$$57. 2t^3 = -128$$

$$59. (x+1)^3 = 8$$

$$61. (2-5z)^3 = -125$$

$$63. x^4 = 16$$

65. $x^5 = 12$

67. $2(x + 2)^4 = 162$

In exercises 69 - 77 odd, solve the equations graphically using your calculators graphing capabilities. Define $y_1(x)$ and $y_2(x)$ for each and then state the solution(s) in set notation. Approximate solutions to the nearest hundredth when appropriate.

69. $\sqrt[3]{x + 5} = 2$

71. $\sqrt{2x - 3} = \sqrt{x} - \frac{1}{2}$

73. $x^{5/3} = 2 - 3x^2$

75. $z^{1/3} - 1 = 2 - z$

77. $\sqrt{y + 2} + \sqrt{3y + 2} = 2$

127. When sky divers initially fall from an airplane, their velocity \neq in miles per hour after free falling d feet can be approximated by $\nu = \frac{60}{11}\sqrt{d}$. (Because of air resistance, they will eventually reach a terminal velocity.) How far do sky divers need to fall to attain the following velocities?

a. 60 miles per hour

b. 100 miles per hour

131. If a wind powered generator has blades that create a circular path with a diameter of 10 feet, then the wattage W generated by a wind velocity of ν miles per hour is modeled by $W(\nu) = 3.8\nu^3$.

a. If the wind velocity doubles, what happens to the wattage generated?

b. Solve $W = 3.8\nu^3$ for ν .

c. If the wind generator is producing 30,400 watts, find the wind speed.

133. Suppose that the legs of a right triangle with angles of 45° and 45° both have length a , as depicted in the figure in the text. Find the length of the hypotenuse. Hint: See top of page 546.