EXAMPLE 5 on p. 454 for Exs. 34–44

SOLVING RADICAL EQUATIONS **Solve the equation. Check for extraneous solutions.**

34. $x - 6 = \sqrt{3x}$

35. $x - 10 = \sqrt{9x}$

36. $x = \sqrt{16x + 225}$

37. $\sqrt{21x + 1} = x + 5$

38. $\sqrt{44 - 2x} = x - 10$

39. $\sqrt{x^2 + 4} = x + 5$

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

41. $\sqrt[4]{3 - 8x^2} = 2x$

42. $\sqrt[3]{8x^3 - 1} = 2x - 1$

43. **MULTIPLE CHOICE** What is (are) the solution(s) of $\sqrt{32x - 64} = 2x$?

Ⓐ 4 Ⓑ −16 Ⓒ 4, −16 Ⓓ 1, 3

44. **SHORT RESPONSE** *Explain* how you can tell that $\sqrt{x + 4} = -5$ has no solution without solving it.

EXAMPLE 6 on p. 455 for Exs. 45–52

EQUATIONS WITH TWO RADICALS **Solve the equation. Check for extraneous solutions.**

45. $\sqrt{4x + 1} = \sqrt{x + 10}$

46. $\sqrt[3]{12x - 5} - \sqrt[3]{8x + 15} = 0$

47. $\sqrt{3x - 8} + 1 = \sqrt{x + 5}$

48. $\sqrt{\frac{2}{3}x - 4} = \sqrt{\frac{2}{5}x - 7}$

49. $\sqrt{x + 2} = 2 - \sqrt{x}$

50. $\sqrt{2x + 3} + 2 = \sqrt{6x + 7}$

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

52. $\sqrt{5x + 6} + 3 = \sqrt{3x + 3} + 4$

SOLVING SYSTEMS **Solve the system of equations.**

53. $3\sqrt{x} + 5\sqrt{y} = 31$
$5\sqrt{x} - 5\sqrt{y} = -15$

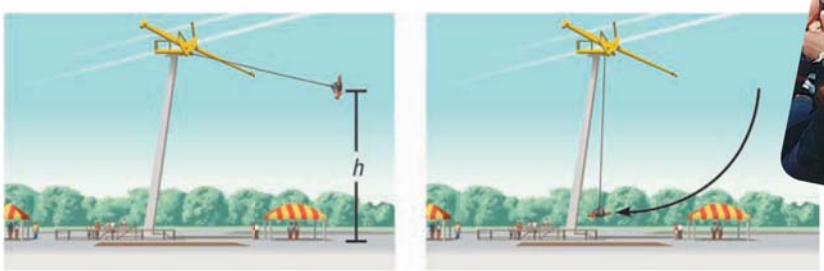
54. $5\sqrt{x} - 2\sqrt{y} = 4\sqrt{2}$
$2\sqrt{x} + 3\sqrt{y} = 13\sqrt{2}$

55. **CHALLENGE** Give an example of a radical equation that has two extraneous solutions.

PROBLEM SOLVING

EXAMPLE 2 on p. 453 for Exs. 56–57

56. **MAXIMUM SPEED** In an amusement park ride called the Sky Flyer, a rider suspended by a cable swings back and forth like a pendulum from a tall tower. A rider's maximum speed v (in meters per second) occurs at the bottom of each swing and can be approximated by $v = \sqrt{2gh}$ where h is the height (in meters) at the top of each swing and g is the acceleration due to gravity ($g \approx 9.8$ m/sec^2). If a rider's maximum speed was 15 meters per second, what was the rider's height at the top of the swing?



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