CHAPTER 2 REVIEW EXERCISES

Section 2.1

Solve the following linear equations.

1. $2y-(1-y)=y+2(y-1)$

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

3. $-0.2x-0.5=-0.4x+0.75$

4. $-2(x-5)+1=3+(7x-2)$

Solve the following absolute value equations.

5. $|2x-7|=1$

6. $|2y-5|-1=|3-y|$

7. $|7z+5|+3=8$

8. $|w-5|=|3w+1|$

Solve the following absolute value equations geometrically and algebraically.

9. $|-2x+1|=7$

10. $|x+4|-|x-1|=0$

Solve each of the following equations for the indicated variable.

11. Area of a trapezoid: $A=\frac{1}{2}h(b+c)$; solve for c

12. Volume of a rectangular pyramid: $V=\frac{1}{3}lwh$; solve for l

13. Temperature conversions: $F=\frac{9}{5}C+32$; solve for C

14. Two trains leave the station at the same time in opposite directions. One travels at an average rate of 90 miles per hour, and the other at an average rate of 95 miles per hour. How far apart are the two trains after an hour and twenty minutes? Round your answer to one decimal place.

15. Two firefighters, Jake and Rose, each have $5000 to invest. Jake invests his money in a money market account with an annual return of 3.25%, while Rose invests hers in a CD paying 4.95% annually. How much more money does Rose have than Jake after 1 year?

Section 2.2

Solve the following linear inequalities. Describe each solution set using interval notation and by graphing.

16. $-8x+3\geq -9x+10$

17. $4(2x-5)<-3(-3x+8)$

18. $\frac{-2(x-1)}{3}\leq\frac{-2x}{4}$

19. $3.1(2x-1)>7.2-4.1x$

20. $-5<3m+1<13$

21. $-14<-2(3+y)\leq 8$

22. $2<\frac{x+1}{4}\leq 7$

23. $-5|3+t|>-10$

24. $3+|2x-1|<1$

25. $-2|x-1|+|3x-3|\geq 7$

26. $6+\frac{x}{5}\le\frac{4}{5}$ or $5+2x\ge x-2$

27. $\frac{8x-5}{9}\le 3$ or $2(3x-16)\ge 4(x-3)$

28. $2.9x+1.8<3(1.3x+6)$ and $7x<5x+34$

Section 2.3

Solve the following quadratic equations.

29. $5x^2-13x-6=0$

30. $x^2=7$

31. $2(x-2)^2=-18$

32. $15x^2+3x+2=-8x$

33. $x^2-8x+14=0$

34. $3x^2-x+3=-7x$

35. $x^2=6x-16$

36. $-2x-7=-4x^2$

37. $2x^2+3x-10=10$

38. $x^2-7x-2=-12$

39. $1.7z^2-3.8z-2=0$

40. $2x^2+7x=x^2+2x-6$

Section 2.4

Solve the following quadratic-like equations.

41. $(x^2+2)^2-7(x^2+2)+12=0$

42. $y^{\frac{2}{3}}+y^{\frac{1}{3}}-6=0$

43. $(t+2)^2-2(t+2)=24$

44. $x^4-13x^2+36=0$

Solve the following equations by factoring.

45. $x^3-4x^2-2x+8=0$

46. $2x^3+2x=5x^2$

47. $x^3-x^2+4x-4=0$

48. $x^4+7x^2-18=0$

49. $x^{\frac{7}{2}}-3x^{\frac{5}{2}}-4x^{\frac{3}{2}}=0$

50. $x^{\frac{7}{3}}+7x^{\frac{4}{3}}-8x^{\frac{1}{3}}=0$

51. $(x-2)^{\frac{3}{4}}+2(x-2)^{\frac{7}{4}}=0$

52. $(x-1)^{-\frac{1}{2}}+4(x-1)^{\frac{1}{2}}=0$

Use the connection between solutions of polynomial equations and polynomial factoring to answer the following questions.

53. Find b and c so the equation $x^3+bx^2+cx=0$ has solutions of -2, 0, and 4.

54. Given that the equation $x^2-6x+m-1=0$ has only one root, find m.

55. If the sum of the roots of the equation $x^2+mx-6=0$ is 5, then what is m?

Section 2.5

Solve the following rational equations.

56. $\frac{1}{x+2}+\frac{1}{x-3}-\frac{x}{x-3}=0$

57. $\frac{1}{x-2}-\frac{x}{x+2}=\frac{2}{x^2-4}$

58. $\frac{y}{y-1}+\frac{1}{y-4}=\frac{y^2}{y^2-5y+4}$

59. $\frac{2}{x+1}-\frac{x}{x-3}=\frac{3x-21}{x^2-2x-3}$

60. Jim cleans a house in 6 hours. John cleans the same house in 8 hours. How long does it take for them to clean the house together?

Section 2.6

Solve the following equations.

61. $\sqrt{-4-x}-4=x$

62. $\sqrt{5x-1}=4+\sqrt{x+3}$

63. $\sqrt{2x^2+8x+1}-x-3=0$

64. $\sqrt{10x^2-14x+16}+1=3x$

65. $x+2=\left(-x^2+11x+19\right)^{\frac{1}{2}}$

66. $\left(2x^2+14x\right)^{\frac{1}{4}}=\left(-x^2-8\right)^{\frac{1}{4}}$

67. $(2x-5)^{\frac{1}{6}}=(x-2)^{\frac{1}{6}}$

68. $\left(x^2+x-16\right)^{\frac{1}{3}}=2(x-1)^{\frac{1}{3}}$

69. The formula for the volume of a cone with radius r and height h is $V=\frac{1}{3}\pi r^2 h$. Solve the equation for r.