Answers for Lesson 6-1   Exercises

1. $10x + 5$; linear binomial

2. $-3x + 5$; linear binomial

3. $2m^2 + 7m - 3$; quadratic trinomial

4. $x^4 - x^3 + x$; quartic trinomial

5. $2p^2 - p$; quadratic binomial

6. $3a^3 + 5a^2 + 1$; cubic trinomial

7. $-x^5$; quintic monomial

8. $12x^4 + 3$; quartic binomial

9. $5x^3$; cubic monomial

10. $-2x^3$; cubic monomial

11. $5x^2 + 4x + 8$; quadratic trinomial

12. $-x^4 + 3x^3$; quartic binomial

13. $y = x^3 + 1$

14. $y = 2x^3 - 12$

15. $y = 1.5x^3 + x^2 - 2x + 1$

16. $y = -3x^3 - 10x^2 + 100$

17. **a.** males: $y = -0.003357x^2 + 0.3253x + 67.05$
    females: $y = -0.001929x^2 + 0.2321x + 74.89$

    b. males: $y = -0.0001000x^3 + 0.002643x^2 + 0.2393x + 67.17$
    females: $y = 0.0001667x^3 - 0.001193x^2 + 0.3755x + 74.69$

    c. For males, the models offer similar fit. For females, the cubic model is a better fit.

18. $y = x^3 - 2x^2$; 4335

19. $y = x^3 - 10x^2$; 2023

20. $y = -0.5x^3 + 10x^2$; 433.5

Answers for Lesson 6-1   Exercises (cont.)

21. $y = -0.03948x^3 + 2.069x^2 - 17.93x + 106.9; 206.07$

22. $y = -0.007990x^3 + 0.4297x^2 - 6.009x + 43.57; 26.34$

23. $y = 0.01002x^3 - 0.3841x^2 + 5.002x + 2.132; 25.39$

24. Check students' work.

25. $x^3 + 4x$; cubic binomial

26. $-4a^4 + a^3 + a^2$; quartic trinomial

27. 7; constant monomial

28. $6x^2$; quadratic monomial

29. $x^4 + 2x^3$; quartic binomial

30. $\frac{1}{2}x^5 + \frac{2}{3}x$; quintic binomial

31. a. $V = 10\pi r^2$

    b. $V = \frac{2}{3}\pi r^3$

    c. $V = \frac{2}{3}\pi r^3 + 10\pi r^2$

32. Answers may vary. Sample: Cubic functions represent curvature in the data. Because of their turning points they can be unreliable for extrapolation.

33. $-c^2 + 16$; binomial

34. $-9d^3 - 13$; binomial

35. $16x^2 - x - 5$; trinomial

36. $2x^3 - 6x + 17$; trinomial

37. $a + 4b$; binomial

38. $-12y$; monomial

39. $8x^2 - 6y$; binomial

40. $-3a + 2$; binomial

Answers for Lesson 6-1   Exercises (cont.)

41. $2x^3 + 9x^2 + 5x + 27$; polynomial of 4 terms

42. $-4x^4 - 3x^3 + 5x - 54$; polynomial of 4 terms

43. $80x^3 - 109x^2 + 7x - 75$; polynomial of 4 terms

44. $2x^3 - 2x^2 + 8x - 27$; polynomial of 4 terms

45. $6a^2 + 3ab - 8$; trinomial

46. $8x^3 + 2x^2$; binomial

47. $30x^3 - 10x^2$; binomial

48. $2a^3 - 5a^2 - 2a + 5$; polynomial of 4 terms

49. $b^3 - 6b^2 + 9b$; trinomial

50. $x^3 - 6x^2 + 12x - 8$; polynomial of 4 terms

51. $x^4 + 2x^2 + 1$; trinomial

52. $8x^3 + 60x^2 + 150x + 126$; polynomial of 4 terms

53. $a^3 - a^2b - b^2a + b^3$; polynomial of 4 terms

54. $a^4 - 4a^3 + 6a^2 - 4a + 1$; polynomial of 5 terms

55. $12s^3 + 61s^2 + 68s - 21$; polynomial of 4 terms

56. $x^3 + 2x^2 - x - 2$; trinomial

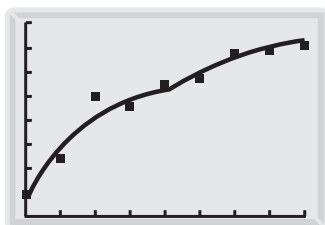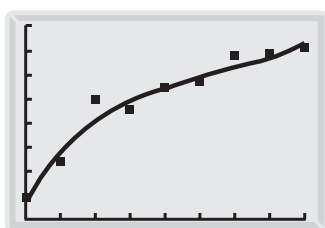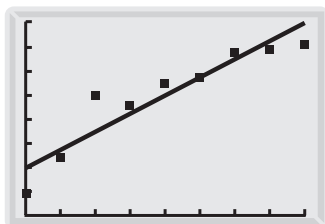**57.** $8c^3 - 26c + 12$; trinomial

58. $s^4 - 2t^2s^2 + t^4$; trinomial

59. a. $y = 0.6877x + 47.97$

$y = 0.0007125x^3 - 0.06366x^2 + 2.1690x + 41.5929$

$y = -0.00005632x^4 + 0.005218x^3 - 0.1757x^2 + 3.0459x + 40.7482$

b.

Answers may vary. Sample: The quartic model fits best.

c. For sample in part (b), 71.68×10^{15} Btu

60. 2.5×10^8 cm^3

61. a. up 4 units

b. $y = 4x^3$ is more narrow.

c. $y = x^3$