Answers for Lesson 6-2 Exercises

1. $x^2 + x - 6$

2. $x^3 + 12x^2 + 47x + 60$

3. $x^3 - 7x^2 + 15x - 9$

4. $x^3 + 4x^2 + 4x$

5. $x^3 + 10x^2 + 25x$

6. $x^3 - x$

7. $x(x - 6)(x + 6)$

8. $3x(3x - 1)(x + 1)$

9. $5x(2x^2 - 2x + 3)$

10. $x(x + 5)(x + 2)$

11. $x(x + 4)^2$

12. $x(x - 9)(x + 2)$

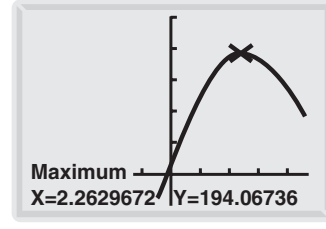
13. about 24.2, −1.4, 0, −5, 1

14. about 5.0, −16.9, 2, 6, 8

15. **a.** $h = x$, $\ell = 16 - 2x$, $w = 12 - 2x$

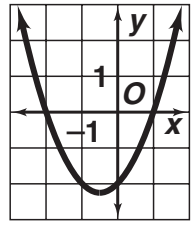
b. $V = x(16 - 2x)(12 - 2x)$

c.

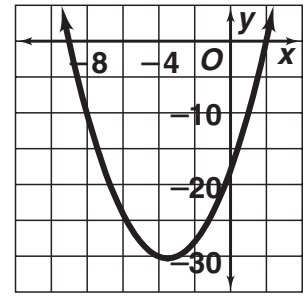


194 in.^{3}, 2.26 in.

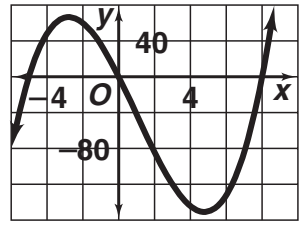
16. 1, −2



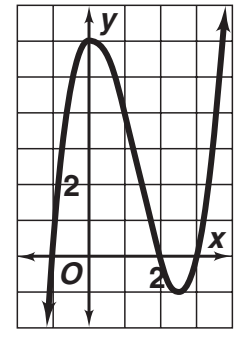
17. 2, −9



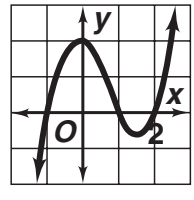
18. 0, −5, 8



19. −1, 2, 3



20. −1, 1, 2



21. $y = x^3 - 18x^2 + 107x - 210$

22. $y = x^3 + x^2 - 2x$

23. $y = x^3 + 9x^2 + 15x - 25$

24. $y = x^3 - 9x^2 + 27x - 27$

25. $y = x^3 + 2x^2 - x - 2$

26. $y = x^3 + 6x^2 + 11x + 6$

27. $y = x^3 - 2x^2$

28. $y = x^3 - \frac{7}{2}x^2 - 2x$

29. -3 (mult. 3)

30. $0, 1$ (mult. 3)

31. $-1, 0, \frac{1}{2}$

32. $-1, 0, 1$

33. 4 (mult. 2)

34. $1, 2$ (mult. 2)

35. $-\frac{3}{2}, 1$ (mult. 2)

36. -1 (mult. 2), $1, 2$

37. 2 x^3 blocks, 15 x^2 blocks, 31 x blocks, 12 unit blocks

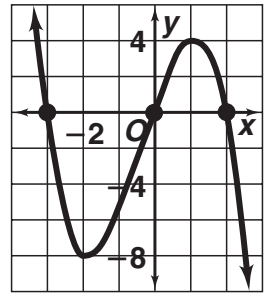
38. **a.** $V = 2x^3 + 15x^2 + 31x + 12$; $2x^3 + 7x^2 + 7x + 2$

b. $V = 8x^2 + 24x + 10$

39. $V = 12x^3 - 27x$

40. **a.** $h = x + 3$; $w = x$

b.



0, −3, 2; where the volume is zero

c. $0 < x < 2$

d. about 4.06 ft^3

41. $y = -2x^3 + 9x^2 - x - 12$

42. $y = 5x^4 - 23x^3 - 250x^2 + 1164x + 504$

43. $y = 3x(x - 8)(x - 1)$ **44.** $y = -2x(x + 5)(x - 4)$

45. $y = x^2(x + 4)(x - 1)$ **46.** $y = \frac{1}{2}x\left(x - \frac{1}{2}\right)\left(x + \frac{1}{2}\right)$

47. about 10.5, -7.1; $\frac{3}{2}$, 4, 6

48. about 0.9, -6.9, -1.4; 0, -3, -1, 1

49. about -2.98, -6.17; 1.5 **50.** none, -1; -2, 0

51–53. Answers may vary. Samples are given.

51. $y = x^3 - 3x^2 - 10x$

52. $y = x^3 - 21x^2 + 147x - 343$

53. $y = x^4 - 4x^3 - 7x^2 + 22x + 24$

54. -4, 5 (mult. 3) **55.** 0 (mult. 2), -1 (mult. 2) **56.** 0, 6, -6

57. Answers may vary. Sample: Write the polynomial in standard form. The constant term is the value of the y-intercept.

58. 1 ft

59. Answers may vary. Sample: $y = x^4 - x^2$, and zeros are 0, ± 1.

60. Answers may vary. Sample: The linear factors can be determined by examining the x-intercepts of the graph.

61. $x + 2a$

62. **a.** $A = -x^3 + 2x^2 + 4x$

b. $6\frac{7}{8}$ square units

63. Answers may vary. Sample: $y = (x - 1)(x + 1)(x - i)(x + i)$; $y = x^4 - 1$

64. **a.** Answers may vary. Sample: translation to the right 4 units

b. No; the second graph is not the result of a horizontal translation.

c. Answers may vary. Sample: rotation of 180° about the origin