

Answers for 4.7

For use with pages 288–291

4.7 Skill Practice

1. A binomial is the sum of two monomials and a trinomial is the sum of three monomials.
2. To complete the square, add $\left(\frac{b}{2}\right)^2$.
3. $-5, 1$ 4. $-13, 3$
5. $-14, -2$ 6. $-11, 13$
7. $11 \pm \sqrt{13}$ 8. $9 \pm \sqrt{5}$
9. $-4 \pm 3\sqrt{5}$ 10. $\frac{-1 \pm 5\sqrt{3}}{2}$
11. $\frac{2 \pm i\sqrt{3}}{3}$ 12. A
13. $9; (x + 3)^2$ 14. $36; (x + 6)^2$
15. $144; (x - 12)^2$
16. $225; (x - 15)^2$
17. $1; (x - 1)^2$ 18. $625; (x + 25)^2$
19. $\frac{49}{4}; \left(x + \frac{7}{2}\right)^2$ 20. $\frac{169}{4}; \left(x - \frac{13}{2}\right)^2$
21. $\frac{1}{4}; \left(x - \frac{1}{2}\right)^2$ 22. $-2 \pm \sqrt{14}$
23. $-4 \pm \sqrt{15}$ 24. $-3 \pm 2\sqrt{3}$
25. $-6 \pm 3\sqrt{2}$ 26. $9 \pm i\sqrt{5}$
27. $1 \pm 2i\sqrt{6}$ 28. $-4 \pm \sqrt{10}$
29. $-7 \pm \sqrt{41}$ 30. $5 \pm 2\sqrt{7}$
31. $-1 \pm i\sqrt{2}$ 32. $-2 \pm 2i$
33. $-\frac{1}{2} \pm \frac{i\sqrt{7}}{2}$ 34. C
35. $-5 + 5\sqrt{3}$ 36. $-3 + \sqrt{57}$
37. $-2 + 2\sqrt{21}$ 38. $-1 + \sqrt{11}$
39. $(2.8, 125.44)$; at 2.8 seconds the water will reach a maximum height of 125.44 feet.
40. $(90, 51)$; walking 90 meters per minute uses 51 calories per minute
41. $y = (x - 4)^2 + 3; (4, 3)$
42. $y = (x - 2)^2 - 5; (2, -5)$
43. $y = (x + 6)^2 + 1; (-6, 1)$
44. $y = (x + 10)^2 - 10; (-10, -10)$
45. $y = \left(x - \frac{3}{2}\right)^2 + \frac{7}{4}; \left(\frac{3}{2}, \frac{7}{4}\right)$
46. $y = \left(x + \frac{7}{2}\right)^2 - \frac{41}{4}; \left(-\frac{7}{2}, -\frac{41}{4}\right)$
47. $y = 2(x + 6)^2 - 47; (-6, -47)$
48. $y = 5(x + 1)^2 + 2; (-1, 2)$
49. $y = 2(x - 7)^2 + 1; (7, 1)$
50. $\sqrt{12} = 2\sqrt{3}; x = -5 \pm 2\sqrt{3}$

Answers for 4.7 continued

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51. 36 should be added to each side instead of 9; $4(x^2 + 6x + 9) = 11 + 36$; $4(x + 3)^2 = 47$;

$$(x + 3)^2 = \frac{47}{4}; x + 3 = \pm \frac{\sqrt{47}}{2};$$

$$x = -3 \pm \frac{\sqrt{47}}{2}.$$

52. $-5, -4$ **53.** $-\frac{3}{2} \pm \frac{i\sqrt{47}}{2}$

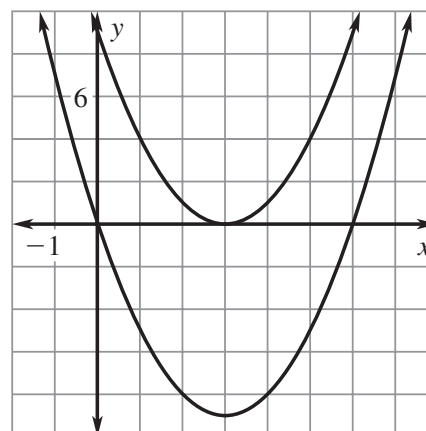
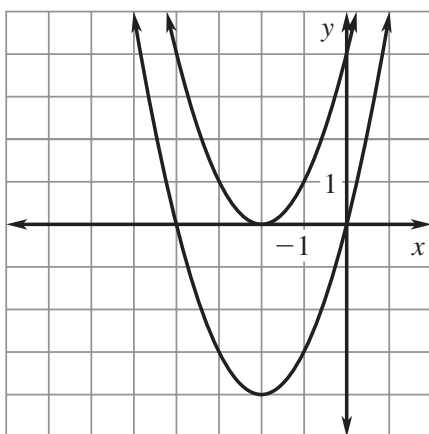
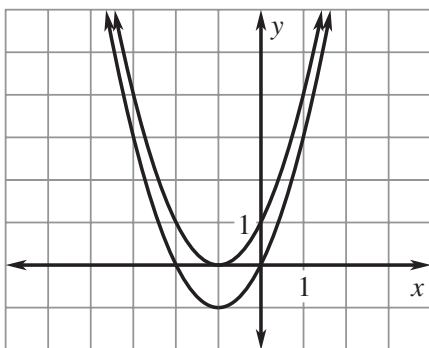
54. $-1 \pm 4\sqrt{2}$ **55.** $\frac{1}{6} \pm \frac{i\sqrt{71}}{6}$

56. $6 \pm 3i\sqrt{6}$

57. $-0.5 \pm 0.5i\sqrt{19}$

58. Sample answer: $x^2 + 6x + 4 = 0$

59. a.



b. The graphs have the same shape and open in the same direction; the vertex is shifted up $\frac{b^2}{4}$ units.

60. $0; k > 0; k < 0$

61. $\frac{-b \pm \sqrt{b^2 - 4c}}{2}$

4.7 Problem Solving

62. 22 ft

63. 40 ft

64. Selling the skateboards for \$60 would maximize weekly revenue at \$3600.

65. Selling systems for \$300 would maximize monthly revenue at \$9000.

Answers for 4.7 continued

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66. a. $y = -0.011(x - 55.9)^2 + 39.9$

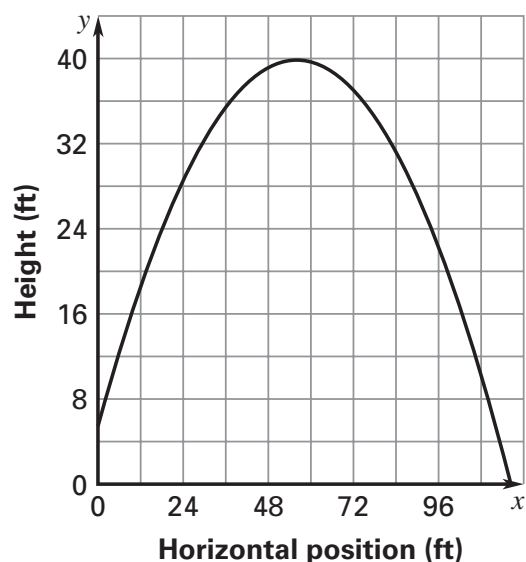
b.

x	0	10	20	30	40
y	5.5	16.7	25.7	32.5	37.1

x	50	60	70	80	90
y	39.5	39.7	37.7	33.5	27.1

x	100	110	120
y	18.5	7.7	-5.3

c.



about 40 ft; about 116 ft

67. a. $1500 = (120 - 2x)(x)$

b. about 17.75, about 42.25;
17.25 must be rejected
because it gives a length for
the garden that is greater than
the length of the side of
the school.

c. about 42.25 ft by 35.5 ft

68. about 0.90 cm

4.7 Mixed Review

69. 9 **70.** 0 **71.** -47

72. 76 **73.** -108 **74.** 49

75. $y = 2x + 1$

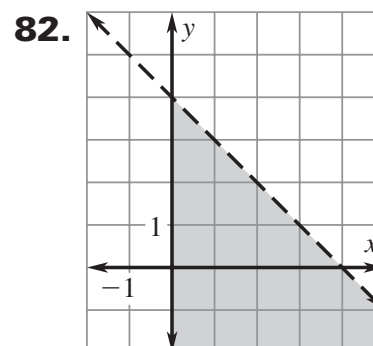
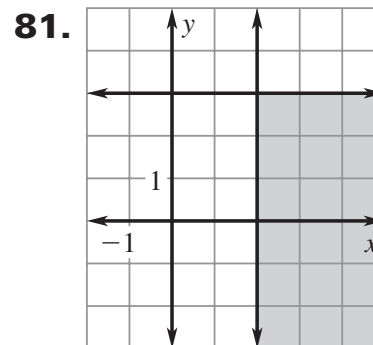
76. $y = -\frac{2}{3}x + 1$

77. $y = 2x + 4$

78. $y = -2x$

79. $y = 3x - 2$

80. $y = \frac{1}{2}x$



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