

Practice 5-7

Mixed Exercises

1. The height $h(t)$ in feet of a stone thrown in the air after t seconds can be modeled by $h(t) = -16t^2 + 40t$. Write this equation in vertex form. What is the maximum height of the stone?

Complete each square. Then rewrite each perfect-square trinomial as a binomial square.

2. $x^2 + 6x + \blacksquare$ 3. $x^2 - 7x + \blacksquare$ 4. $x^2 + 12x + \blacksquare$ 5. $x^2 + 3x + \blacksquare$
 6. $x^2 - 8x + \blacksquare$ 7. $x^2 + 16x + \blacksquare$ 8. $x^2 + 21x + \blacksquare$ 9. $x^2 - 2x + \blacksquare$

Rewrite each equation in vertex form. Then sketch the graph.

10. $y = x^2 + 4x - 6$ 11. $y = x^2 - 6x + 6$ 12. $y = 4x^2 + 8x - 4$
 13. $y = 4x^2 + 4x + 1$ 14. $y = 2x^2 + 4x - 5$ 15. $y = -3x^2 - 4x - 1$
 16. $y = -3x^2 + 3x - 1$ 17. $y = x^2 + 2x + 1$ 18. $y = -5x^2 + 10x + 1$
 19. $y = -2x^2 + 4x + 3$ 20. $y = x^2 + 5x + \frac{5}{4}$ 21. $y = -2x^2 + 10x - 11$
 22. $y = 6x^2 - 12x + 1$ 23. $y = -2x^2 + 8x - 9$ 24. $y = 3x^2 + 9x + 6$

Solve each quadratic equation by completing the square.

25. $x^2 + 12x + 4 = 0$ 26. $x^2 - x - 5 = 0$ 27. $3x^2 = -12x - 3$
 28. $x^2 - x - 1 = 0$ 29. $4x^2 - 8x + 1 = 0$ 30. $5x^2 = 8x - 6$
 31. $2x^2 - 4x - 3 = 0$ 32. $x^2 + 11x = 0$ 33. $x^2 = 5x + 14$
 34. $2x^2 + x - 1 = 0$ 35. $2x^2 + 6x - 7 = 0$ 36. $2x^2 = -8x + 45$
 37. $x^2 = -3x - 3$ 38. $4x^2 = -2x + 1$ 39. $3x^2 = -6x + 9$
 40. $x^2 = 7x + 12$ 41. $x^2 = 3x + 7$ 42. $3x^2 = 6x - 9$
 43. $x^2 = -3x + 2$ 44. $x^2 = -7x - 1$ 45. $4x^2 = -3x + 2$
 46. $2x^2 = 4x - 5$ 47. $2x^2 = 5x + 5$ 48. $2x^2 = 6x + 5$
 49. $x^2 = 3x$ 50. $x^2 = 8x$ 51. $4x^2 = -2x - 3$
 52. $2x^2 = -2x + 5$ 53. $2x^2 = -5x - 5$ 54. $3x^2 = -5x + 1$
 55. $x^2 = -3x + 1$ 56. $x^2 = -3x - 6$ 57. $x^2 = -3x + 8$
 58. $2x^2 = 2x + 4$ 59. $3x^2 = 7x + 8$ 60. $2x^2 = -6x + 4$
 61. $x^2 = -7x - 9$ 62. $2x^2 = 5x$ 63. $3x^2 = -42x$
 64. $2x^2 = -4x + 5$ 65. $4x^2 = -x + 5$ 66. $3x^2 = -3x + 1$
 67. $x^2 = -7x + 1$ 68. $x^2 = -3x + 5$ 69. $x^2 = -3x - 9$
 70. $x^2 = 3x + 4$ 71. $2x^2 = 2x + 8$ 72. $3x^2 = x + 4$