Chapter 4

4.1 **Graph the function. Label the vertex and axis of symmetry.**

1. $y = 3x^2 + 5$ **2.** $y = -x^2 - 4x - 4$ **3.** $y = -2x^2 + 4x + 1$ **4.** $y = 2x^2 + 5x + 6$

4.2 **Graph the function. Label the vertex and axis of symmetry.**

5. $y = 4(x - 2)^2 + 1$ **6.** $y = -(x + 3)^2 - 2$ **7.** $y = 3(x - 1)(x - 5)$ **8.** $y = \frac{1}{2}(x + 3)(x + 2)$

4.2 **Write the quadratic function in standard form.**

9. $y = 7(x + 2)(x + 4)$ **10.** $y = 2(x + 5)(x - 3)$ **11.** $y = (x - 7)^2 + 7$ **12.** $y = -(x + 1)^2 - 4$

4.3 **Factor the expression. If the expression cannot be factored, say so.**

13. $x^2 - 4x + 4$ **14.** $t^2 - 11t - 26$ **15.** $x^2 + 21x + 108$ **16.** $b^2 - 400$

4.3 **Solve the equation.**

17. $x^2 + 5x - 14 = 0$ **18.** $x^2 - 11x + 24 = 0$ **19.** $c^2 + 6c = 55$ **20.** $n^2 = 5n$

4.4 **Factor the expression. If the expression cannot be factored, say so.**

21. $2x^2 + x - 15$ **22.** $10a^2 - 19a + 7$ **23.** $3r^2 + 9r - 4$ **24.** $4t^2 + 8t + 3$

4.4 **Find the zeros of the function by rewriting the function in intercept form.**

25. $y = 81x^2 - 16$ **26.** $y = 2x^2 - 9x - 5$ **27.** $y = 4x^2 + 18x + 18$ **28.** $y = -3x^2 - 30x - 27$

4.5 **Simplify the expression.**

29. $\sqrt{56}$ **30.** $3\sqrt{2} \cdot \sqrt{50}$ **31.** $\sqrt{\frac{4}{7}}$ **32.** $\frac{6}{1 + \sqrt{2}}$

4.5 **Solve the equation.**

33. $b^2 = 8$ **34.** $p^2 + 6 = 127$ **35.** $(x - 5)^2 = 10$ **36.** $3(x + 2)^2 - 4 = 11$

4.6 **Write the expression as a complex number in standard form.**

37. $(5 + 2i) + (6 - 5i)$ **38.** $-3i(7 + i)$ **39.** $\frac{1 + 2i}{3 - 8i}$ **40.** $\frac{(3 - 2i) + 2i}{(-1 + 7i) - (2 + 3i)}$

4.7 **Solve the equation by completing the square.**

41. $x^2 + 6x = 10$ **42.** $x^2 - 9x - 2 = 0$ **43.** $2c^2 - 12c + 6 = 0$ **44.** $3z^2 - 3z + 9 = 0$

4.8 **Use the quadratic formula to solve the equation.**

45. $x^2 + 10x - 10 = 0$ **46.** $x^2 - x - 1 = 0$ **47.** $4s^2 + 3s = 12$ **48.** $-2r^2 = r + 17$

4.9 **Solve the inequality using any method.**

49. $x^2 - 10x \geq 0$ **50.** $x^2 - 8x + 12 < 0$ **51.** $-x^2 + 7x + 6 > 1$ **52.** $3x^2 + 16x + 2 \leq 3x$

4.10 **Write a quadratic function in standard form for the parabola that passes through the given points.**

53. $(-1, -6), (0, -7), (2, 9)$ **54.** $(-2, -1), (1, 2), (3, -6)$ **55.** $(-3, 36), (0, 36), (2, 16)$

EXTRA PRACTICE