Name _____ Date _____

3.1 Extra Practice

In Exercises 1–6, solve the equation by graphing.

1. $x^2 - 1 = 0$
2. $6x^2 = 4x + 2$
3. $x^2 - 14 = -5x$
4. $9x - 9 = -4x^2$
5. $\frac{1}{2}x^2 - 2x = 6$
6. $-3x = \frac{1}{3}x^2 + 6$

In Exercises 7–9, solve the equation using square roots.

7. $(k - 3)^2 = 121$
8. $3(x + 1)^2 - 4 = 5$
9. $\frac{4}{3}x^2 = \frac{2}{3}x^2 + 6$

10. Write an equation of the form $(x - a)^2 + b = d$ that has (a) two integer solutions, (b) two irrational solutions, and (c) no real solutions.

In Exercises 11–14, solve the equation by factoring.

11. $0 = x^2 - 121$
12. $3k^2 + 2k = 2k^2 + 11k$
13. $-w^2 - 3w - 7 = -2w^2 + 3$
14. $2y^2 = 6y$

In Exercises 15 and 16, solve the equation using any method. Explain your choice of method.

15. $x^2 - x + \frac{6}{25} = 0$
16. $n^2 - 1.5 = 0.19$

In Exercises 17–20, find the zero(s) of the function.

17. $h(x) = x^2 + 7x - 18$
18. $j(x) = x^2 - 16$
19. $g(x) = x^2 - 13x$
20. $f(x) = 9x^2 - 24x + 16$

21. A local kayak rental shop rents 28 kayaks per week when it charges \$25 per day. For each \$5 increase in price, the shop loses four kayak rentals per week. How much should the kayak rental shop charge to maximize weekly revenue? What is the maximum weekly revenue?

22. You drop a coin into a fountain from a height of 15 feet. Write an equation that models the height h (in feet) of the coin above the fountain t seconds after it has been dropped. How long is the coin in the air?

Name _____ Date _____

3.2 Extra Practice

In Exercises 1–3, find the square root of the number.

1. $3\sqrt{-25}$
2. $2\sqrt{-40}$
3. $4\sqrt{-54}$

In Exercises 4–7, find the values of x and y that satisfy the equation.

4. $2x - 3yi = 14 + 12i$
5. $\frac{1}{3}x - 6i = 8 - 3yi$
6. $22 + \frac{1}{5}yi = 2x - 2$
7. $-1 + 10i = -x + 3yi$

In Exercises 8–11, add or subtract. Write the answer in standard form.

8. $(9 + 6i) - (15 - 7i)$
9. $13 - (5 + i) + 7i$
10. $14 - (17 - 7i) + 8i$
11. $-4 + (9 - 2i) + 3i$

12. The additive inverse of a complex number z is a complex number z_a such that $z + z_a = 0$. Find the additive inverse of each complex number.

    a. $z = 2 + 3i$ b. $z = 4 - 4i$ c. $z = -5 + 2i$

In Exercises 13–16, multiply. Write the answer in standard form.

13. $(4 + 7i)(5 + 2i)$
14. $(5 - 3i)(5 + 3i)$
15. $(10 - 7i)(10 + 7i)$
16. $(6 - 4i)^2$

17. Justify each step in performing the operation.

    $(6 - 2i)(8 - 3i)$

$48 - 18i - 16i + 6i^2$	
$48 - 34i + 6i^2$	
$48 - 34i + 6(-1)$	
$42 - 34i$	

In Exercises 18 and 19, solve the equation.

18. $x^2 + 16 = -28$
19. $\frac{1}{3}x^2 = -15$

In Exercises 20 and 21, find the zeros of the function.

20. $f(x) = -x^2 - 48$
21. $g(x) = -\frac{1}{4}x^2 - 13$

Name _____ Date _____

3.4 Extra Practice

In Exercises 1–8, solve the equation using the Quadratic Formula. Use a technology to check your solution(s).

1. $x^2 + 3x - 4 = 0$
2. $4x^2 + 8x + 4 = 0$
3. $x^2 + 5x + 20 = 0$
4. $4x^2 - 3x - 5 = 0$
5. $x^2 + 12x = 15$
6. $3x^2 - 6x = -25$
7. $-v^2 = -10v + 4$
8. $-3t^2 = -8t + 6$

In Exercises 9–12, find the discriminant of the quadratic equation and describe the number and type of solutions of the equation.

9. $5x^2 - 4x + 2 = 0$
10. $14x + 49 = -x^2$
11. $-12h = 3h^2 + 1$
12. $-2x^2 + x = 3$

In Exercises 13 and 14, find a possible pair of integer values for *a* and *c* so that the quadratic equation has the given number and type of solution(s). Then write the equation.

13. $ax^2 - 3x + c = 0$; two real solutions
14. $ax^2 + 10x + c = 0$; two imaginary solutions
15. Determine the number and type of solutions to the equation $2x^2 - 8x = -15$.

    A. two real solutions
    B. one real solution
    C. two imaginary solutions
    D. one imaginary solution

In Exercises 16 and 17, use the Quadratic Formula to write a quadratic equation that has the given solutions.

16. $x = \dfrac{10 \pm \sqrt{-68}}{14}$
17. $x = \dfrac{-3 \pm i\sqrt{7}}{8}$

In Exercises 18–21, solve the quadratic equation using the Quadratic Formula. Then solve the equation using another method. Which method do you prefer? Explain.

18. $7x^2 + 7 = 14x$
19. $x^2 + 20x = 8$
20. $x^2 + 2 = -x$
21. $8x^2 - 48x + 64 = 0$
22. The quadratic equation $x^2 + x + c = 0$ has two imaginary solutions. Show that the constant c must be greater than $\frac{1}{4}$.