Name: _____ **Period:** _____ **Date:** _____

Algebra 2A Chapter 4 Review

Graph the function. Identify the vertex, axis of symmetry, *y*-intercept, and maximum or minimum value.

1. $y=x^2-2x-4$

2. $y=-x^2-4x+2$

3. $y=-(x+1)^2-2$

4. $y=2x(x+2)$

Tell how to translate the graph of $y=0.2x^2$ in order to produce the graph of the function.

5. $y=0.2(x+3)^2-4$

Find the zeros of the function.

6. $y=x^2-11x+18$

7. A farmer wants to fence off a portion of a square field for a vegetable garden. The length of the garden will be 4 feet less than the length of the square field. The width of the garden will be 8 feet less than the length of the square field.

   a. Using *x* as the length of the square field, write an expression for the area of the garden.
   b. If the area of the garden will be 192 square feet, what are the dimensions of the vegetable garden?

Factor the expression.

8. $16x^2-25$

9. $5x^2-42x+16$

Solve.

10. $4x^2-12x-16=0$

11. $3x^2=x+14$

12. $x^2-18x+81=0$

13. $3x^2-9=3$

14. $-3(x+9)^2=-63$

15. $\frac{1}{3}x^2+1=33$

16. $4x^2+5=-7$

17. $4x^2-8x+1=0$

18. $2x^2 - x + 2 = 0$

19. $2x^2 - 3x - 5 = 0$

20. Write the functions $f(x) = x^2 + 4x - 12$ and $g(x) = 5x^2 + 20x - 60$ in intercept form. Then, compare the vertex and zeros of f with the vertex and zeros of g. Generalize your observations to explain the relationship between the vertex and zeros of $y = a(x - r)(x - s)$ and the vertex and zeros of $y = (x - r)(x - s)$.

Write the expression as a complex number in standard form.

21. $-i + (7 - 5i) - 3(2 - 3i)$

22. $(-3 + 7i)(1 - 2i)$

23. $(3 - 2i)^2$

24. $\dfrac{5}{1 + i}$

25. $\dfrac{-1 + 10i}{-9i}$

26. Solve the equation by completing the square.
$x^2 + 2x - 24 = 0$

Solve by completing the square.

27. $-3x^2 - 12x + 18 = 0$

28. A rock is thrown from the top of a tall building. The distance, in feet, between the rock and the ground t seconds after it is thrown is given by $d = -16t^2 - 4t + 412$. How long after the rock is thrown is it 410 feet from the ground?

Write a quadratic function whose graph has the given characteristics.

29. (-2, 2), (–1, –1), (2, 6)

30. x-intercepts: (4, –1)
point: (1, –2)

31. one x-intercept (8, 0), axis of symmetry $x = 4$, and maximum value 8.

Find the discriminant of the equation and give the number and type of solutions of the equation.

32. $6x^2 = 4 - 5x$

33. $2y^2 - 3y = -4$

34. Graph: $y > x^2 + 3x + 3$