

## Quadratics Review

Perform the given operation and write the complex number in standard form.	
1. $(30 - i) - (18 + 6i) + 30i$	2. $(-1 - i) + (9 - 3i)$
3. $(12 - 9i) - (17 + 2i)$	4. $(7 + 5i)(7 - 5i)$
5. $(3 + 2i)^2$	6. $-3i(8 - 5i)$
7. $\frac{-5-3i}{-4+2i}$	8. $\frac{-7}{3-i}$
Solve the quadratic equation by factoring.	
9. $2x^2 - 5x = 12$	10. $8x^2 + 17x + 9 = 0$
11. $x^2 + 5x + 4 = 0$	12. $x^2 - 25 = 0$
Solve the quadratic equation by taking the square root.	
13. $4(x + 1)^2 = 100$	14. $-x^2 - 12 = -87$

$$15. 3x^2 - 270 = 0$$

$$16. \frac{1}{3}(x + 5)^2 = 7$$

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

$$17. 2x^2 - 4x = 12$$

$$18. x^2 - 4x + 7 = 0$$

$$19. 6x^2 + 84x + 300 = 0$$

$$20. x^2 = 6x - 10$$

**Solve the quadratic equations using any method.**

$$21. 3x^2 + 2x = 0$$

$$22. 4x^2 - 1 = 0$$

$$23. x^2 - 6x - 7 = 0$$

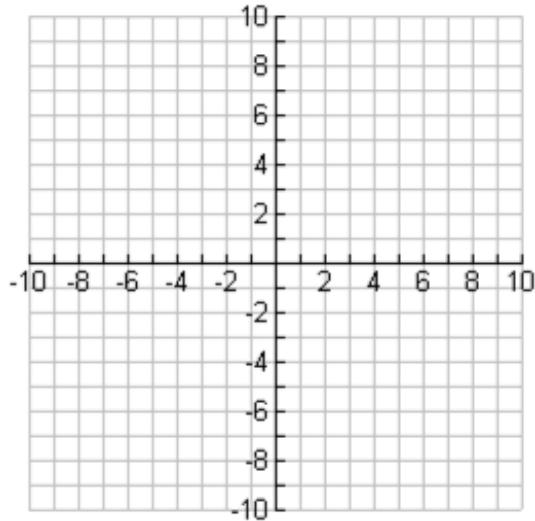
$$24. 2x^2 - 7x = 15$$

**Graph the quadratic equations.**

25.  $y = \frac{1}{2}(x - 1)^2 + 2$

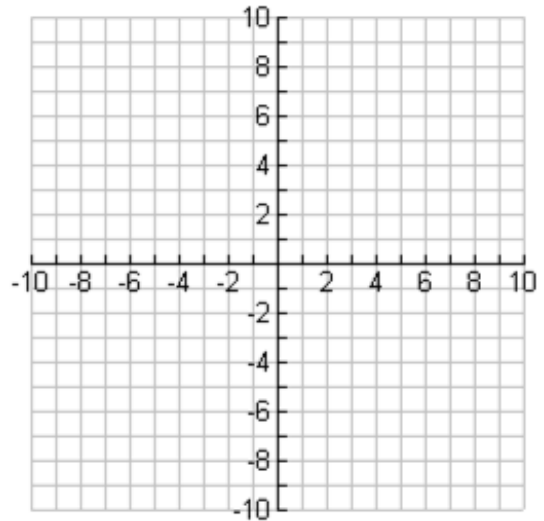
Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_



26.  $y = (x - 2)(x + 3)$

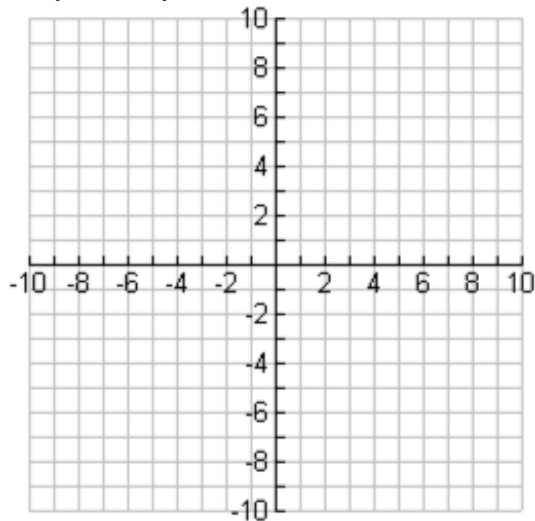
Vertex: \_\_\_\_\_ Axis of Symmetry: \_\_\_\_\_ X-intercepts: \_\_\_\_\_



27.  $y = -3(x + 1)^2 - 4$

Vertex: \_\_\_\_\_

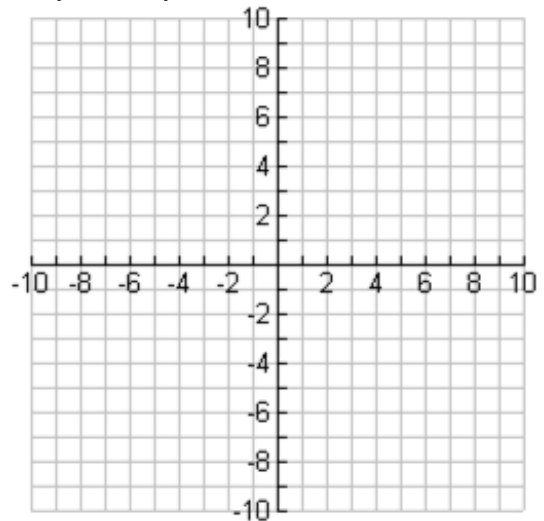
Axis of Symmetry: \_\_\_\_\_



28.  $y = x^2 + 4x - 7$

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_



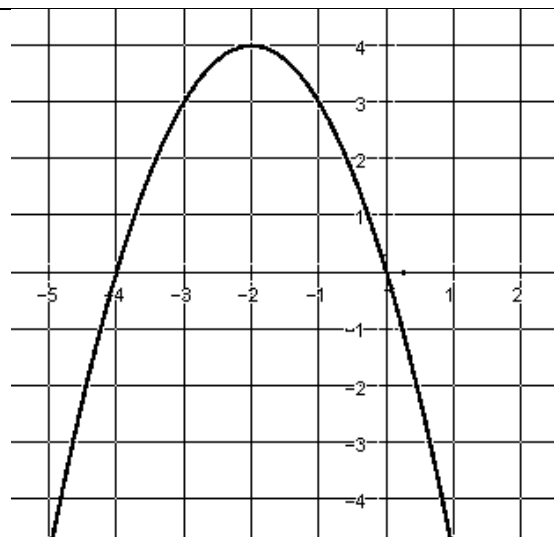
29. State the following:

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

X-intercepts: \_\_\_\_\_

Y-intercept: \_\_\_\_\_



### Application

30. Abigail tosses a coin off a bridge into a stream below. The distance, in feet, the coin is above the water is modeled by the equation  $y = -\frac{1}{5}(x^2 - 13x)$ . Where  $x$  represents time in seconds.

- a) What is the greatest height of the coin?
  
  
  
  
  
  
  
  
  
  
- b) How much time will it take for the coin to hit the water?

31. When a gray kangaroo jumps, its path through the air can be modeled by  $y = -3x^2 + 6x$  where  $x$  is the kangaroo's horizontal distance traveled (in feet) and  $y$  is its corresponding height (in feet).

- a) How high can a gray kangaroo jump?
  
  
  
  
  
  
  
  
  
  
- b) How far can it jump?

32. The height,  $h(t)$ , in feet, of an object shot from a cannon can be modeled by the function  $h(t) = -(t - 3)^2 + 14$ , where  $t$  is the time, in seconds, after the cannon is fired.

- a) What is the maximum altitude that the object reaches?
  
  
  
  
  
  
  
  
  
  
- b) How much time does it take for the object to reach the ground?