

In each of the quadratic equations,  $ax^2 + bx + c = 0$ , identify the values of  $a$ ,  $b$ , and  $c$ .

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

$a =$   
 $b =$   
 $c =$

2.  $2x^2 + 3x + 1 = 0$

$a =$   
 $b =$   
 $c =$

3.  $x^2 - 4x - 12 = 0$

$a =$   
 $b =$   
 $c =$

Use the quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  to solve 1 – 3.

1.

2.

3.

Write each of the quadratic expressions in factored form.

4.  $x^2 + 3x + 2$

5.  $2x^2 + 3x + 1$

6.  $x^2 - 4x - 12$

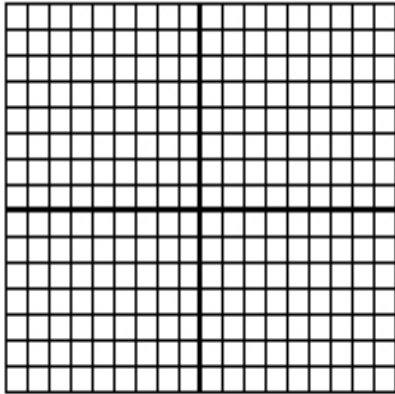
7.  $x^2 + 8x - 20$

8.  $x^2 + x - 12$

9.  $x^2 - 7x + 12$

Graph:

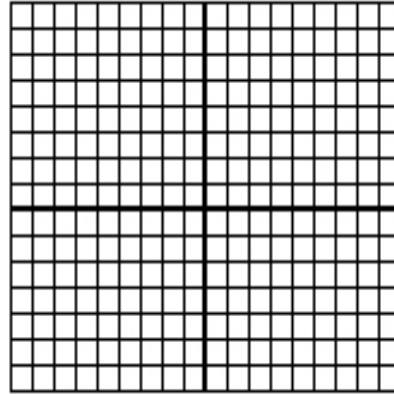
10.  $f(x) = (x + 5)(x - 4)$



x-intercept(s):      y-intercept:

vertex:

11.  $k(x) = x^2 - 4$



x-intercept(s):      y-intercept:

vertex:

12. Complete parts a-e below.

a. Graph each of the quadratic functions:

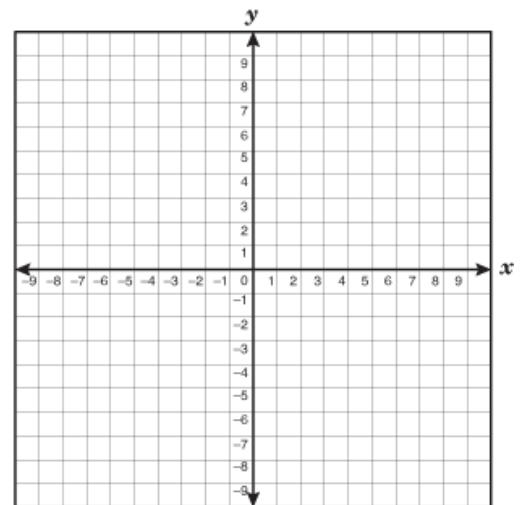
$$f(x) = x^2$$

$$g(x) = x^2 - 9$$

$$h(x) = (x + 2)^2 - 9$$

b. How do the functions compare to each other?

c. How do  $g(x)$  and  $h(x)$  compare to  $f(x)$ ?



d. Look back at the functions above and identify the x-intercepts of  $g(x)$ . What are they?

e. What are the coordinates of the points corresponding to the x-intercepts in  $g(x)$  in each of the other functions? How do these coordinates compare to one another?

For problems 16-17, use the given functions to find the missing values.

16.  $f(x) = x^2 + 4x - 12$

a.  $f(0) =$  \_\_\_\_\_

b.  $f(2) =$  \_\_\_\_\_

c.  $f(x) = 0, x =$  \_\_\_\_\_

d.  $f(x) = 20, x =$  \_\_\_\_\_

17.  $f(x) = x^2 - 6x + 9$

a.  $f(0) =$  \_\_\_\_\_

b.  $f(-3) =$  \_\_\_\_\_

c.  $f(x) = 0, x =$  \_\_\_\_\_

d.  $f(x) = 16, x =$  \_\_\_\_\_