## **Bell Work**

1. What is the vertex of the parabola for the function below?

$$f(x) = 2(x-4)^2 + 3$$

- 2. What is a root of a quadratic function?
- 3. What is the equation of the absolute value parent function?
- 4. What are 2 numbers that add up to 13 and multiply to get 36?

$$f(x) = x^2 - 4x - 12$$

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

$$(x-6)(x+2) = 0$$

$$\boldsymbol{x} - \boldsymbol{6} = \boldsymbol{0} \qquad \boldsymbol{x} + \boldsymbol{2} = \boldsymbol{0}$$

- 1. Set the function equal to 0.
- 2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

- 3. Set each equation to 0 and solve.
- 4. 2 answers

$$f(x) = x^2 - 9x + 20$$

$$x^2 - 9x + 20 = 0$$

$$(x-4)(x-5)=0$$

$$\boldsymbol{x} - \boldsymbol{4} = \boldsymbol{0} \qquad \boldsymbol{x} - \boldsymbol{5} = \boldsymbol{0}$$

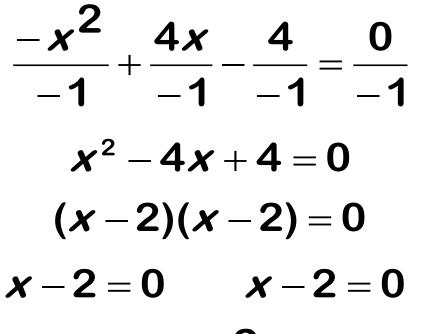
- 1. Set the function equal to 0.
- 2. Factor the equation.

*Find 2 numbers that multiply to get the last number and add up to the middle number.* 

- 3. Set each equation to 0 and solve.
- 4. 2 answers

$$f(x) = -x^2 + 4x - 4$$

$$-x^{2}+4x-4=0$$



*The x<sup>2</sup> always needs to be positive, so divide everything by -1.* 

*x* = 2

Since the answers are the same, you only need to write it down once.

- 1. Set the function equal to 0.
- 2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

- 3. Set each equation to 0 and solve.
- 4. 2 answers

$$f(x) = 2x^2 + 16x - 96$$

$$2x^2 + 16x - 96 = 0$$

 $x^{2} + 8x - 48 = 0$ 

*We can divide everything by 2.* 

- (x+12)(x-4)=0
- x + 12 = 0 x 4 = 0
- *x* = -12 *x* = 4

1. Set the function equal to 0.

## 2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

- 3. Set each equation to 0 and solve.
- 4. 2 answers

- $f(x) = 4x^2 + 16x$ 
  - $4x^{2} + 16x = 0$ 
    - $x^{2} + 4x = 0$
- (x+0)(x+4) = 0
- x + 0 = 0 x + 4 = 0
  - x = 0 x = -4

*We can divide everything by 4.* 

> Since there isn't a last number, think of it as 0. So what 2 numbers multiply to get 0 and add up to 4?

- 1. Set the function equal to 0.
- 2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

- 3. Set each equation to 0 and solve.
- 4. 2 answers

x = 0, -4

$$f(x) = -3x^2 + 75$$

- $-3x^{2}+75=0$ 
  - $x^2 25 = 0$
- (x+5)(x-5)=0
- x + 5 = 0 x 5 = 0
- *x* = 5 x = -5

- We can divide everything by -3.
  - Since the middle number is missing, think of it as 0. What 2 numbers multiply to get -25 and add up to 0?

- 1. Set the function equal to 0.
- 2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

- 3. Set each equation to 0 and solve.
- 4. 2 answers

x = -5, 5

# Assignment: Page 338 # 18 – 20, 37 – 45

Find the zeros of each function by using a graph and table.

**18.**  $f(x) = -x^2 + 4x - 3$  **19.**  $g(x) = x^2 + x - 6$  **20.**  $f(x) = x^2 - 9$ 

Find the zeros of each function.

**37.** 
$$f(x) = 6x - x^2$$
**38.**  $g(x) = x^2 - 25$ **39.**  $h(x) = x^2 - 12x + 36$ **40.**  $f(x) = 3x^2 - 12$ **41.**  $g(x) = x^2 - 22x + 121$ **42.**  $h(x) = 30 + x - x^2$ **43.**  $f(x) = x^2 - 11x + 30$ **44.**  $g(x) = x^2 - 8x - 20$ **45.**  $h(x) = 2x^2 + 18x + 28$