Bell Work Tuesday 4/15/2014

If you have your quiz re-work, staple the original quiz with your re-work and turn it in to me.

What are the solutions to the equation:

(remember the zero-product property)

$0 = (x+5)(x-2)$

$x+5=0$ $\quad x-2=0$

$-5\ -5 \quad +2\ +2$

$x=-5 \quad x=2$

$(-5,0) \quad (2,0)$

$0 = (2x+1)(x-3)$

$2x+1=0 \quad x-3=0$

$-1\ -1 \quad +3\ +3$

$\frac{2x}{2} = \frac{-1}{2} \quad x=3$

$x=-\frac{1}{2} \quad (3,0)$

$(-\frac{1}{2},0)$

$(-\frac{1}{2},0) \quad (3,0)$

Objective -

To graph a quadratic function from intercept form.

When graphing a quadratic we will graph 4 things:

> x-intercepts

> y-intercept

> vertex

– The lowest point or the highest point on a parabola is called the vertex.

- For any y-intercept, the x-value is equal to: Zero.
- For any x-intercept, the y-value is equal to: Zero.
- To find the vertex, we will first find the x-value and then substitute that in the equation to find the corresponding y-value.
  - > We can find the vertex 2 ways
    - $x = \frac{-b}{2a}$ $ax^2 + bx + c$
    - OR
    - halfway between the two x-intercepts.

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

x-intercept: (2,0)

x-intercept: (-4,0)

y-intercept: (0,-8)

vertex: (-1,-9)

X-intercepts let $y=0$

Set each factor equal to zero and solve for x

$0 = (x-2)(x+4)$

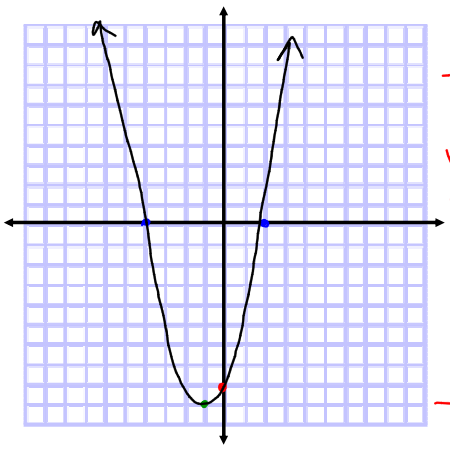
$x-2=0$ $\quad$ $x+4=0$

$+2\ +2$ $\quad$ $-4\ -4$

$x=2$ $\quad$ $x=-4$

$(2,0)$ $\quad$ $(-4,0)$

x-intercepts



y-intercept — let $x=0$

$x=0$

$y=(0-2)(0+4)$ then solve for y.

$y=(-2)(4)$

$y=-8$

y-int = $(0,-8)$

Vertex: x-value of the vertex, we find the halfway point between x-intercepts.

x-intercepts → Add the x-intercepts and divide by 2.

$x = \frac{2+-4}{2} = \frac{-2}{2} = -1$

x-value of the vertex

to find the y-value of the vertex, substitute the x-value I just found. Solve for y.

$y=(-1-2)(-1+4)$

$y=(-3)(3)$

$y=-9$

Vertex = $(-1,-9)$

$$y = (x-5)(x+1)$$

x-intercepts let $y = 0$

$0 = (x-5)(x+1)$

$x-5=0$ $\quad +5\ +5$ $\quad x=5$ $\quad (5,0)$

$x+1=0$ $\quad -1\ -1$ $\quad x=-1$ $\quad (-1,0)$

x-intercept: (5, 0)

x-intercept: (-1, 0)

y-intercept: (0, -5)

vertex: (2, -9)

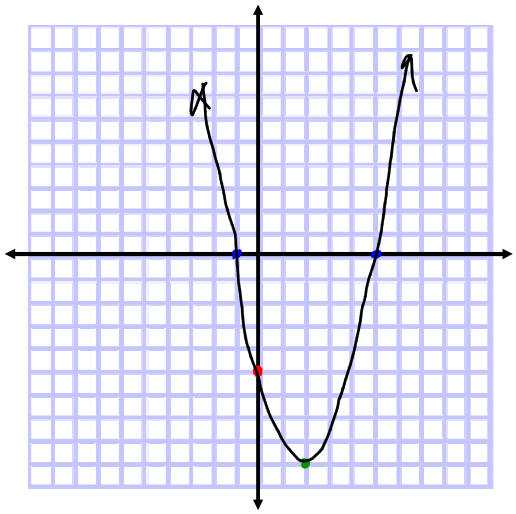
y-int let $x=0$

$y=(0-5)(0+1)$

$y=(-5)(1)$

$y=-5$

$(0,-5)$



Vertex:

$$x = \frac{5+-1}{2} = \frac{4}{2} = 2$$

$y=(2-5)(2+1)$

$y=(-3)(3)$

$y=-9$

Vertex = (2, -9)