Bell Work 4/13/2015

Factor out the greatest common factor:

$6x^2(1+4x^2) = 6x^2+24x^4$

What are the roots of the polynomial:

$(x-5)(2x+4)=0$

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

$2x+4=0$
$-4\ -4$
$\frac{2x}{2}=\frac{-4}{2}$
$x=-2$

$x=5$
$x=-2$

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.

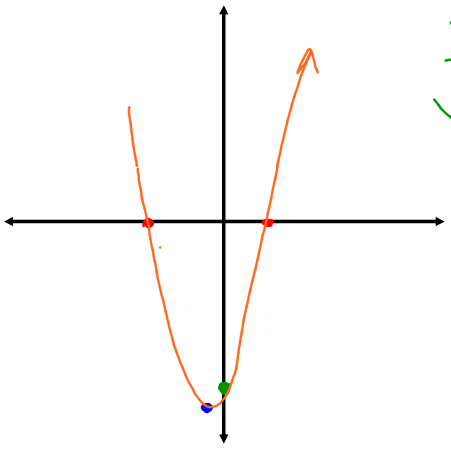
$y = (x-2)(x+4)$

x-intercept: (2, 0)

x-intercept: (-4, 0)

y-intercept: (0, -8)

vertex: (-1, -9)



x-intercept, let $y = 0$

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

$x - 2 = 0$
$+2 \quad +2$
$x = 2$
$y = 0$
$(2, 0)$

$x + 4 = 0$
$-4 \quad -4$
$x = -4$
$y = 0$
$(-4, 0)$

y-intercept, let $x = 0$.

$y = (x-2)(x+4)$
$y = (0-2)(0+4)$
$y = (-2)(4)$
$y = -8$
$x = 0$
$(0, -8)$

Vertex: x-value of the vertex is halfway between the 2 x-intercepts.

Add then divide by 2.

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

$$x = -1$$

To find the y-value, substitute the x-value into the equation.

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

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

$y = (-3)(3)$

$y = -9$

$x = -1$

Vertex $(-1, -9)$

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

x-intercepts: let $y = 0$

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

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

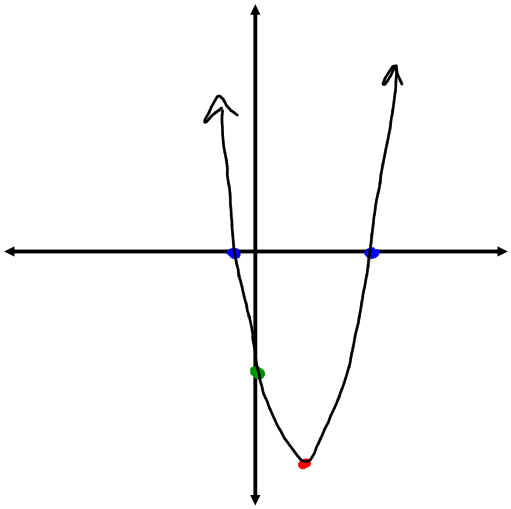
$x+1=0$ $-1\ -1$ $x=-1$ $y=0$ $(-1,0)$

x-intercept: (5, 0)

x-intercept: (-1, 0)

y-intercept: (0, -5)

vertex: (2, -9)



y-intercept; let $x=0$

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

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

$y=(-5)(1)$

$y=-5$ $x=0$ $(0,-5)$

Vertex ← x-intercepts added, then divided by 2.

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

$x=2$

Substitute x-value into the equation & solve for y.

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

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

$y=(-3)(3)$

$y=-9$

Vertex: (2, -9)

Assignment

Graphing Quadratics Practice 1