

## Unit 6 Notes

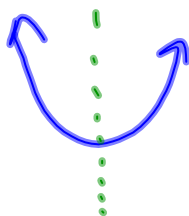
### Quadratic Equations

$$y = x^2 - 6x + 5$$

Ex. 1 What does the graph of this equation look like?

parabola 

$$y = \underbrace{1}a x^2 - \underbrace{6}b x + \underbrace{5}c$$



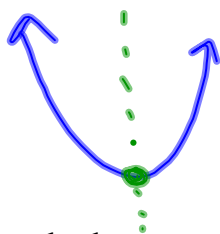
Find the axis of symmetry using  $x = \frac{-b}{2a}$

$$x = \frac{6}{2} = x = 3$$

$$y = x^2 - 6x + 5$$

$$9 - 18 + 5$$

Find the vertex of the parabola.



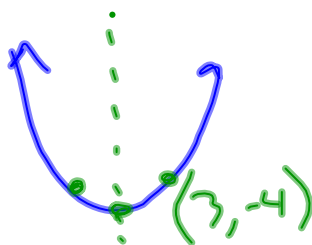
$$(3, -4)$$

$$y = x^2 - 6x + 5$$

$$4 - 12 + 5$$

Find at least five points on the graph.

$$1 - 6 + 5$$



$$(3, -4)$$

$$(2, -3)$$

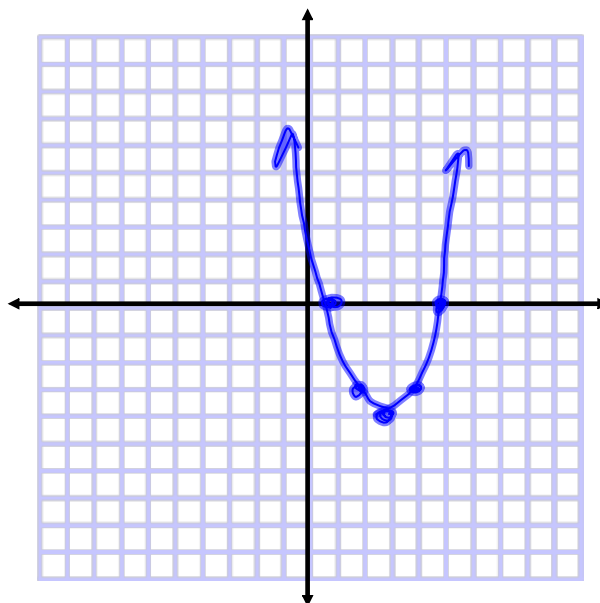
$$(4, -3)$$

$$(1, 0)$$

$$(5, 0)$$

$$y = x^2 - 6x + 5$$

Graph.



$$y = x^2 - 6x + 5$$

Find the two roots.

$$y = x^2 - \underline{6}x + \underline{5}$$
$$(\underline{x-1})(\underline{x-5})$$
$$x=1 \quad x=5$$

$$y = x^2 - 2x - 15$$

Ex. 2 Find the axis of symmetry using  $x = \frac{-b}{2a}$

$$x = \frac{2}{2} = 1$$

$$y = x^2 - 2x - 15$$

$$1 - 2 - 15$$

Find the vertex of the parabola.

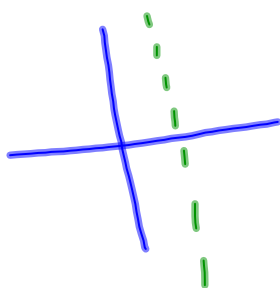
$$(1, -16)$$

$$y = x^2 - 2x - 15$$

$$4 - 4 - 15$$

$$25 - 10 - 15$$

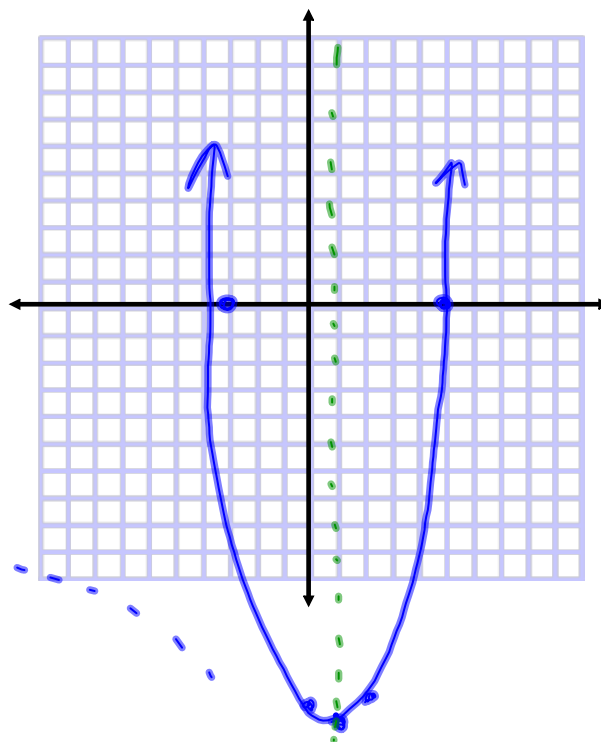
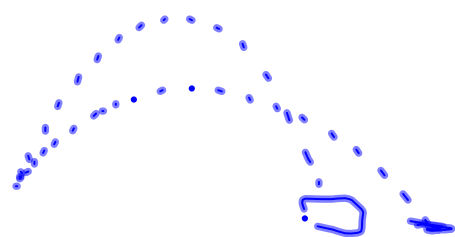
Find at least five points on the graph.



$$(1, -16)$$
$$(2, -15)$$
$$(5, 0)$$
$$(0, -15)$$
$$(-3, 0)$$

$$y = x^2 - 2x - 15$$

Graph.



$$y = x^2 - 2x - 15$$

Find the two roots.

$$y = x^2 - 2x - 15$$

$$(x - 5)(x + 3)$$

$$x = 5 \quad x = -3$$
~~$$(x - 3)(x + 5)$$~~

Use  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  to solve

Ex. 3  $2x^2 + x - 10 = 0$   
 $a \quad b \quad c$

$$x = \frac{-1 \pm \sqrt{1^2 - 4 \cdot 2 \cdot -10}}{2 \cdot 2}$$

$$\frac{-1 \pm \sqrt{1 + 80}}{4} = \frac{-1 \pm 9}{4}$$

$$\frac{-1 + 9}{4} = 2$$

$$\frac{-1 - 9}{4} = -2.5$$

Use  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  to solve

Ex. 4       $3x^2 + 4x - 9 = 0$