

Day 1

Nov 30-1:52 PM

LT 4.1

Topic: A - Standard Form

How can I represent quadratic functions and demonstrate understanding of their significant features, including real-world situations?

Sep 10-3:04 PM

Standard Form

The Equation...

$$y = \underline{a}x^2 + \underline{b}x + \underline{c}$$

a, b, c have important roles and AFFECT the picture of a quadratic

Nov 30-12:38 PM

Standard Form

$$y = \underline{a}x^2 + bx + c$$

"a" tells us something else too!

	open up or down?	stretch or compress?
$y = 7x^2$	UP	Compress
$y = \frac{1}{2}x^2$	UP	stretch
$y = -\frac{1}{6}x^2$	down	stretched

conclusions:

- a) when a is positive....
- b) when a is negative....
- c) when $|a| < 1$
- d) when $|a| > 1$

Aug 28-7:05 AM

4.1 A Standard Form finished

Standard Form

$$y = ax^2 + bx + \underline{c}$$

"c" is also important

$$y = x^2 + 3x + 2 \quad (0, 2) \quad \text{what is the y-intercept?}$$

$$y = 2x^2 + 5 \quad (0, 5)$$

conclusions:

a) the "c" value is...

Aug 28-7:05 AM

$$f(x) = 3x^2 - 6x + 1$$

opens up or down:

min or max:

vertex: $(1, -2)$

axis of symmetry: $x = 1$

y-intercept: $(0, 1)$

domain: \mathbb{R} 's

range: $y \geq -2$

$$x = \frac{-b}{2a}$$

$$a = 3 \quad b = -6 \quad c = 1$$

$$x = \frac{-(-6)}{2(3)} = 1$$

Oct 27-3:27 PM

Standard Form

The **vertex** is...

the highest or lowest "peak" point

To find the **vertex** ...

$$x = -\frac{b}{2a} \quad \text{Then plug in } x \text{ to find } y\text{-value}$$

Aug 28-7:06 AM

Standard Form

The **axis of symmetry** is...

the vertical line passing through the vertex

$$x = \underline{x \text{ of vertex}}$$

Aug 28-7:06 AM

Day 2

Nov 30-1:52 PM

Standard Form

$$y = -2x^2 - 8x - 5 \quad \frac{8}{2} \cdot (-2)$$

opens up or down:

min or max:

vertex: $(-2, 3)$ $(-8,$

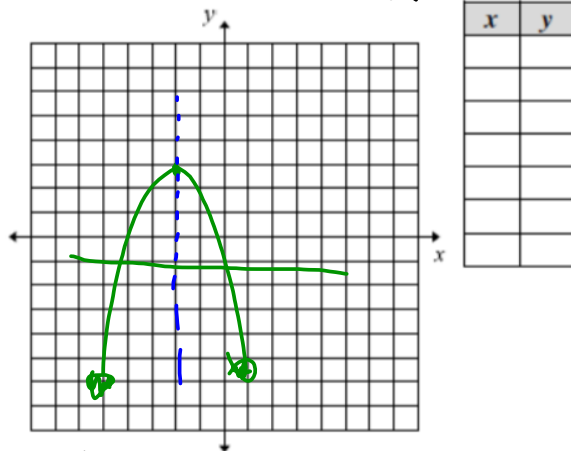
axis of symmetry:

y-intercept:

domain:

range:

$x = -2$
 $(0, -5)$
 $y \leq 3$



$$\frac{-b}{2(a)} = \frac{8}{2(-2)} = -2$$

Oct 26-9:57 AM

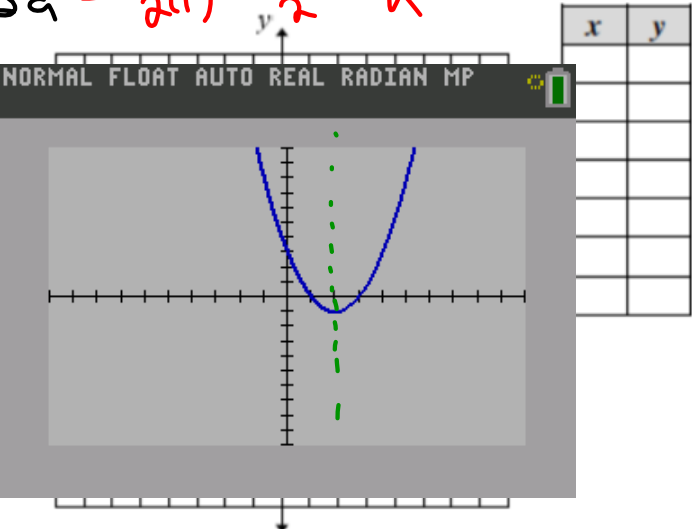
4.1 A Standard Form finished

Standard Form

$(2)^2 - 4(2) + 3 = -1$
 $a=1$
 $b=-4$
 $c=3$

$y = x^2 - 4x + 3$
 $x = -\frac{b}{2a} = \frac{4}{2(1)} = \frac{4}{2} = 2$

opens up or down:
min or max:
 vertex: $(2, -1)$
 axis of symmetry: $x=2$
 y-intercept: $(0, 3)$
 domain: \mathbb{R}
 range: $y \geq -1$



x	y

Oct 26-9:57 AM

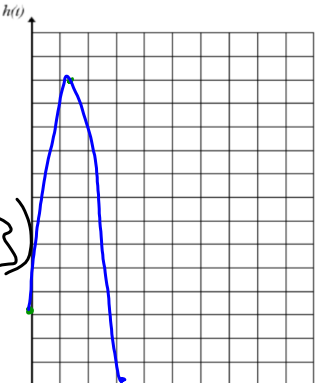
Standard Form

A ball is thrown in the air from 3 meters above the ground modeled by

$$h(t) = -4.9t^2 + 14t + 3$$

$a = -4.9$
 $b = 14$
 $c = 3$

$\frac{-14}{2(-4.9)} = (1.43, 13)$



a) find the maximum height of the ball.
13m

b) how long does it take the ball to reach the maximum height?
1.43

c) find the total length of time the ball is in the air.
3.2

D: $0 \leq x$
 $3.2 \geq x$
R: $0 \leq y$
 $13 \geq y$

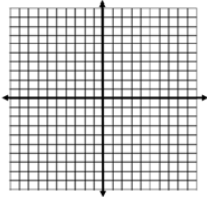
Oct 26-9:58 AM

4.1 A Standard Form finished

Simultaneous Round Table

Simultaneous Round Table
4.1A Graphing Quadratic Functions

page 1 Name _____

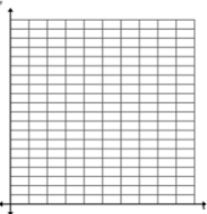
<p>1) Find the Vertex for the equation:</p> $y = x^2 - 2x + 1$ <p>Based on the equation, will the vertex be a maximum or a minimum?</p> <p>What is the Vertex? _____</p> <p>Show work, CHECK with calculator.</p>	<p>2) What will the axis of symmetry be for the parabola?</p> <p>Axis of Symmetry:</p> <p style="text-align: center;">X = _____</p>												
<p>3) Fill in the table below and plot the points to graph the equation. (Include the <i>axis of symmetry</i> as a dashed line)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th>X</th><th>Y</th></tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> 	X	Y											<p>4) What is the Domain and Range of the graph?</p> <p>Domain: _____</p> <p>Range: _____</p>
X	Y												

Nov 30-1:49 PM

Simultaneous Round Table

Simultaneous Round Table
4.1A Graphing Quadratic Functions

page 2 Name _____

<p>5) The path of a ball follows the equation $h(t) = -4.9t^2 + 30t + 3$, where t is the time in the air (in seconds) and $h(t)$ is the height of the ball.</p> <p>Vertex: (show work, CHECK with calculator)</p> <p>What is the maximum height that the ball reaches?</p> <p>How long does it take to reach the maximum height?</p>	<p>6) What will the axis of symmetry be for the parabola?</p> <p>Axis of Symmetry:</p> <p style="text-align: center;">X = _____</p>												
<p>7) Fill in the table below and plot the points to graph the equation. (Include the <i>axis of symmetry</i> as a dashed line)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th>X</th><th>Y</th></tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table> 	X	Y											<p>8) What is the Domain and Range of the graph?</p> <p>Domain: _____</p> <p>Range: _____</p>
X	Y												

Nov 30-1:41 PM

4.1 A Standard Form finished

Summary:

1. Standard Form

$$y = ax^2 + bx + c$$

Vertex:

2. Intercept (Factored) Form

$$y = (x + 3)(x - 2)$$

3. Vertex Form

$$y = 2(x + 3)^2 - 2$$

*1 set of ()

*Vertex is easy to find!

Vertex:

(opposite inside, outside)

Dec 3-10:57 AM