

LT 4.1

4.1 C - Vertex Form

I can graph quadratic functions and demonstrate understanding of their significant features, including real-world situations.

Sep 10-3:04 PM

So far we have learned...

1. Standard Form

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

2. Intercept (Factored) Form

$$y = (x + q)(x - r)$$

NEW (and last) form!

3. Vertex Form

$$y = a(x - h)^2 + k$$

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

*1 set of ()

Dec 3-10:57 AM

4.1 C Vertex Form finished

Vertex Form

graph the standard form equations using your calc and find the vertex.
What do you notice?

standard form	vertex form
$r(x) = -2x^2 - 4x - 2$	$r(x) = -2(x+1)^2$ $(-1, 0)$
$s(x) = 4x^2 + 8x + 4$	$s(x) = 4(x+1)^2 - 10$ $(-1, -10)$
$t(x) = x^2 - 10x + 22$	$t(x) = (x-5)^2 - 3$ $(5, -3)$
$w(x) = -3x^2 - 12x - 7$	$w(x) = -3(x+2)^2 + 5$ $(-2, 5)$

$y = (2x+1)^2 + 7$
 $(-1, 7)$
 $2x+1=0$
 $x = -0.5$

$(-0.5, 7)$

Aug 28-7:10 AM

Vertex Form

$$f(x) = \underline{a}(x - \underline{h})^2 + \underline{k}$$

a - opens up or down
 $a - \cap$

h - $a + \cup$
what makes $()'s = 0$
x-value of vertex

k - y-value of vertex

Aug 28-7:10 AM

Vertex Form

find the vertex of the following quadratic functions.

$$r(x) = -2(x+1)^2$$

$$s(x) = 4(x+1)^2 - 10$$

$$t(x) = (x-5)^2 - 3$$

$$w(x) = -3(x+2)^2 + 5$$

Dec 1-12:55 PM

Vertex Form

IN YOUR OWN WORDS:

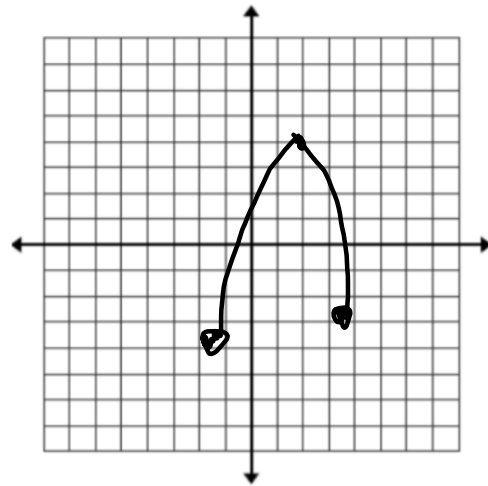
Describe how to find the vertex of a quadratic function that is written in vertex form.

Aug 28-7:10 AM

Vertex Form

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

- a) Vertex: $(2, 4)$
- b) Opens (up or down): down \cap
- c) Axis of Symmetry: $x = 2$
- d) Maximum or minimum? max
- e) Domain: \mathbb{R} 's
- f) Range: $y \leq 4$
- g) Graph

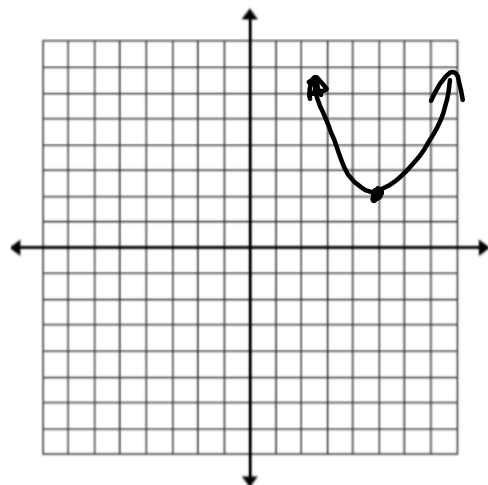


Oct 29-9:36 AM

Vertex Form

$$y = (x - 5)^2 + 2$$

- a) Vertex: $(5, 2)$
- b) Opens (up or down): up
- c) Axis of Symmetry: $x = 5$
- d) Maximum or minimum? min
- e) Domain: \mathbb{R} 's
- f) Range: $y \geq 2$
- g) Graph



Dec 1-1:03 PM

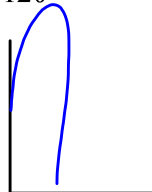
4.1 C Vertex Form finished

<h1>SUMMARY</h1>	
<u>Form:</u>	<u>Vertex:</u>
1. Standard $y = ax^2 + bx + c$	$x = \frac{-b}{2a}$ *Plug in x to find y
2. Intercept (Factored) $y = (x + 3)(x - 2)$	Average x-intercepts to find x Plug in x to find y
3. Vertex $y = a(x - h)^2 + k$	(x, y) ↓ ↘ (opp. inside, outside) h k

Dec 3-10:57 AM

Vertex Form

a ball is hit into the air. It's height H (in meters) after t seconds is given by $H(t) = -4.9(t - 4)^2 + 120$



- sketch the path of the ball.
- what direction does the parabola open? DOWN
- what's the initial height of the ball? 41.6
- what is the vertex? What does it mean? (4, 120)
- when does the ball hit the ground? 8.9 sec, 120
- what is the domain and range?

$x \geq 0 \quad x \leq 9$
 $y \geq 0 \quad y \leq 120$

Aug 28-7:11 AM

4.1 C Vertex Form finished

P2 _____	7D9LM
P3 _____	7D9Z7
P4 _____	7D9ZZ

Dec 16-8:42 AM

4.1ABC Homework

Graphing Review Worksheet
(8 problems)



Oct 29-3:45 PM