Graphing quadratics

Thursday, August 24, 2017 11:01 AM

Standard Form

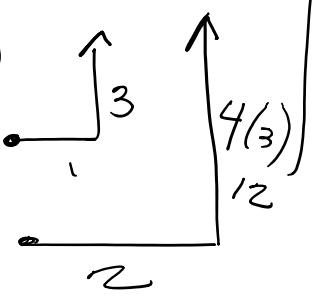
graphing:

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

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

vtx $(2, 5)$

$a = 3$



Standard form

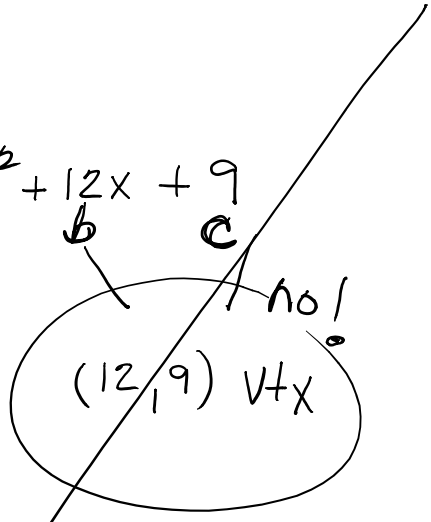
$y = ax^2 + bx + c$

Ex.

$y = -3x^2 + 12x + 9$

$a \quad b \quad c$

$a = -3$



wrong

- $a = -3$
- a/s $\frac{-12}{2(-3)} = 2 = x$
- Vertex $(2, 21)$
- concavity down
- y-int
- graph. ✱
- Domain $\mathbb{R}$
- Range $y \leq 21$

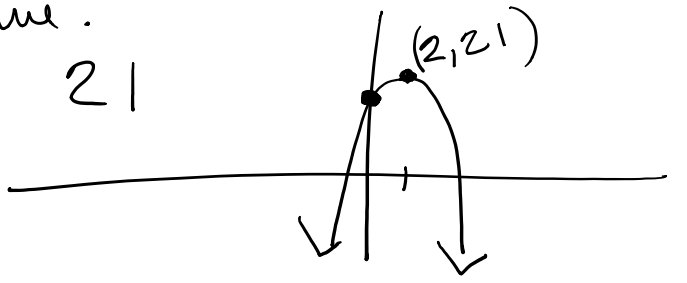
- a/s $x = \frac{-b}{2a}$ $\frac{-12}{2(-3)}$ $\frac{-12}{-6} = 2$
- Vertex $(2, \text{plug})$
- a same

$-3x^2 + 12x + 9$ y-int

$-3(2)^2 + 12(2) + 9$

- max / min
- value.

21



$-12 + 24 + 9$

$12 + 9$

21

$-3x^2 + 12x + 9$

$(0, 9)$

Ex.)

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

$a = -1 \quad b = 2 \quad c = -4$

- a/s $\frac{-b}{2a}$ $\frac{-(2)}{2(-1)} = 1$
- Vertex. $(1, -3)$
- y-int -4
- D $\mathbb{R}$
- Range $y \leq -3$
- graph ✓
- max/min what? -3

$-(1)^2 + 2(1) - 4$

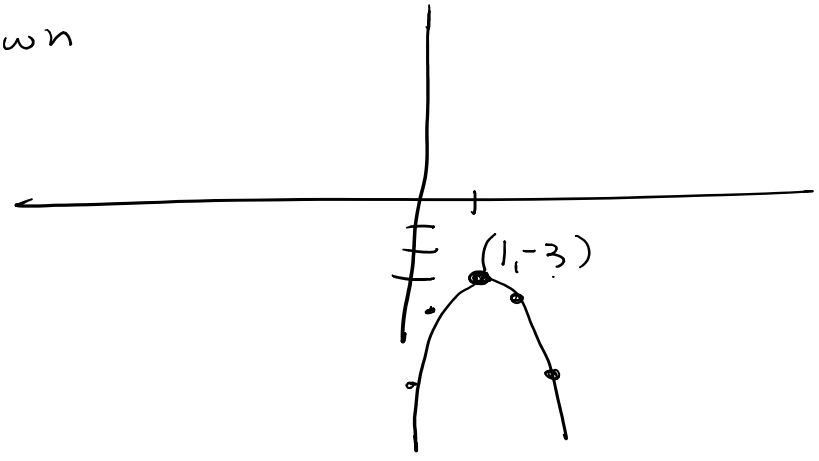
$-1 + 2 - 4$

$1 - 4$

-3

- Concavity

down



Ex.)

- a/s $x=1$
- Vertex

$g(x) = 2x^2 - 4x + 7$

a/s $\quad \frac{-b}{2a} = \frac{-(-4)}{2(2)} = 1$

$(1, 5)$

$2(1)^2 - 4(1) + 7$

$2 - 4 + 7$

$-2 + 7$

5