

BELLWORK - Tuesday, October 28th

Skill: Evaluate each expression

1. $2x^2 + 3x - 4$ for $x = -2$

2. $-x^2 - 4x + 1$ for $x = -2$

Concept: Find the solution(s) of each function.

1. $x^2 + 4x = 0$

2. $x^2 - 6x = -11$

Extension:

The path of a ball thrown in the air is represented by the function

$h(t) = -16t^2 + 70t + 4$, where the height of the ball is a function of the time.

What part of the graph is used to determine how long it takes for the ball to hit the ground?

BELLWORK - Tuesday, October 28th

Skill: Evaluate each expression

1. $2x^2 + 3x - 4$ for $x = -2$; -2

2. $-x^2 - 4x + 1$ for $x = -2$; 5

Concept: Find the solution(s) of each function.

1. $x^2 + 4x = 0$
 $-4, 0$

2. $x^2 - 6x = -11$
No real solution

Extension:

The path of a ball thrown in the air is represented by the function

$h(t) = -16t^2 + 70t + 4$, where the height of the ball is a function of the time.

What part of the graph is used to determine how long it takes for the ball to hit the ground?

Mini-Quiz: Choose one of the functions shown below. Complete the handout you picked up.

$$1. x^2 + 2x = 3$$

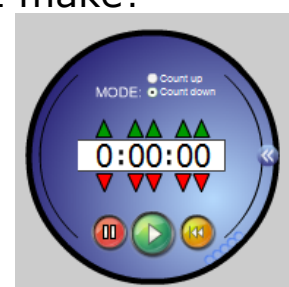
$$2. x^2 + 6x = -8$$

$$3. x^2 - 6x = -9$$

Spiral Review...

- Compare the graph of $y = (x - 2)^2$ with $y = x^2$.
 - > What difference does subtracting 2 within the parentheses make?
- Compare the graph of $y = x^2 - 2$ with $y = x^2$.
 - > What difference does subtracting 2 from x^2 make?
- Compare the graph of $y = 2x^2$ with $y = x^2$.
 - > What difference does multiplying x^2 by 2 make?

skinnier

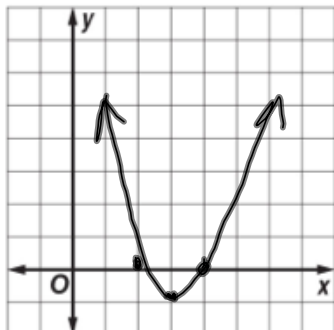


Describe the transformations of the parent function.

Graph each function.

$$y = x^2$$

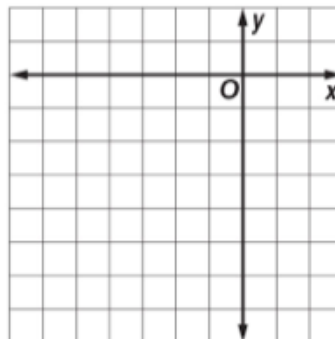
a. $y = (x - 3)^2 - 1$



1. Moved right 3 units
2. Moved down one unit

S.F. < 1 wider

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

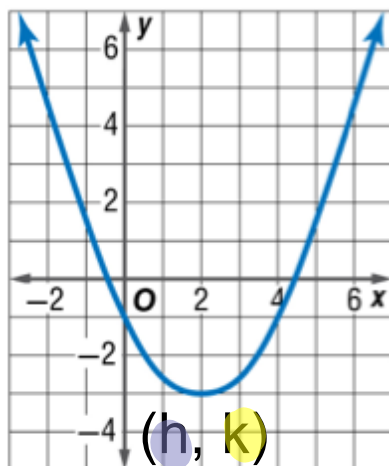


1. Moved left 2 units
2. Get wider / stretch
3. Reflect over x-axis

Vertex form of a parabola:

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

← h is positive



$$a(x + h)^2 + k$$

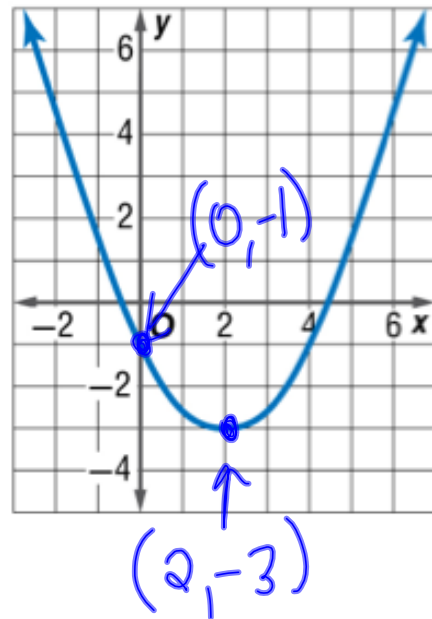
$$a(x - (-h))^2 + k$$

*Describe the transformations of the graph on the parent function.

*Write the equation of the function in vertex form.

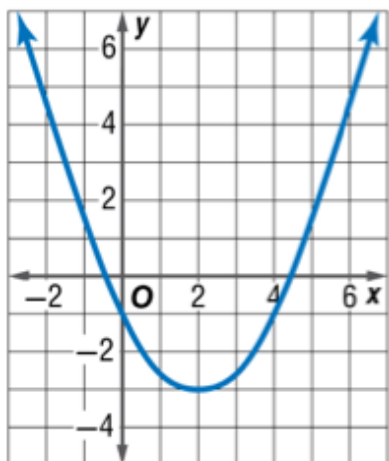
$$y = a(x-h)^2 + k$$

$(h, k) = \text{vertex}$



How to write an equation in vertex form:

1. From the graph, you can determine the vertex. $(2, -3)$
2. Pick a point on the graph. $(0, -1)$
3. Plug these values into the formula for vertex form.
4. Solve for a.



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

$$-1 = a(0-2)^2 + -3$$

$$-1 = a(4) - 3$$

$$2 = 4a$$

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

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

Describe the transformations of the graph on the parent function.

Write the equation of the function in vertex form.

