Baking a tray of corn muffins takes 4 cups of milk, 3 cups of flour, and 1 cup of sugar. Baking a tray of bran muffins takes 2 cups of milk, 3 cups of flour, and 1/2 cup of sugar. A baker has 16 cups of milk, 15 cups of flour, and 6 cups of sugar. He makes $3 profit per tray of corn muffins and $2 profit per tray of bran muffins. How many trays of each type of muffin should the baker make to maximize his profit?

① x = # of trays of corn muffins
y = # of bran muffin trays

② $x \geq 0$
$y \geq 0$
$4x+2y \leq 16$ milk
$3x+3y \leq 15$ flour
$x+\frac{1}{2}y \leq 6$ sugar

③ objective function to maximize profit
$f(x,y) = 3x+2y$

$3x+2y$

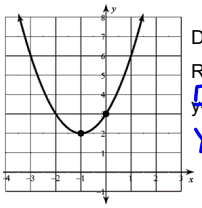
$x \geq 0$
$y \geq 0$
$y \leq -2x+8$
$y \leq -x+5$
$y \leq -2x+12$

(0,5)
(0,0)
(4,0)
(3,2) → #13

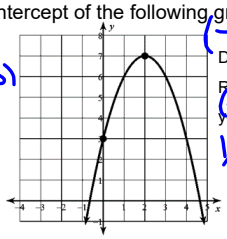
To maximize profits, the baker should make 3 trays of corn muffins, 2 trays of bran muffins for a profit of $13.

Oct 16-8:49 AM

Find the domain, range and y-intercept of the following graphs.



Domain: $(-\infty, \infty)$
Range: $[2, \infty)$
y-intercept: $y=3$



Domain: $(-\infty, \infty)$
Range: $(-\infty, 7]$
y-intercept: $y=3$

When you finish, grab a WS off the table-

-->make number 6 $y=-5(x+3)^2+6$

Oct 10-10:35 AM

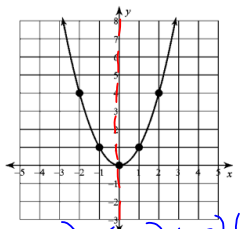
Unit 3.1 Vertex Form of Quadratic Functions

Given the quadratic parent function, graph numbers 2 and 3 without a calculator by transforming the indicated points on the parent function. Answer the questions for each graph given the following vocabulary.

- **Axis of symmetry** – a line of symmetry for a quadratic function. The two sides of a graph on either side of the axis of symmetry look like mirror images of each other. It is an equation of a vertical line.
- **Maximum value of a parabola** – the largest y value on the parabola.
- **Minimum value of a parabola** – the smallest y value on the parabola.
- **Vertex** – a point on the parabola that intersects the axis of symmetry. It is either the maximum or minimum value of a parabola.

Oct 14-1:18 PM

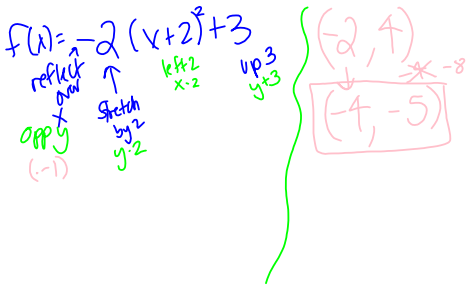
1. $f(x) = x^2$



(-2,4) (-1,1) (0,0) (1,1) (2,4)

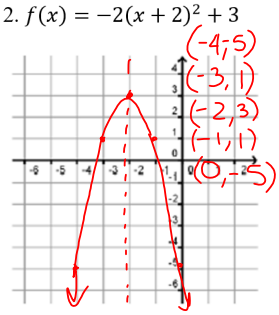
- axis of symmetry: $x =$ 0
- vertex: (0 , 0)
- opens up or down? up
- maximum or minimum? min at $y =$ 0
- y – intercept: (0, 0)
- End behavior:
  $x \to -\infty, f(x) \to \infty$
  $x \to \infty, f(x) \to \infty$

Oct 14-1:20 PM



Oct 11-11:07 AM

2. $f(x) = -2(x+2)^2 + 3$



- axis of symmetry: $x =$ -2
- vertex: (-2 , 3)
- opens up or down? down
- maximum or minimum? max

at $y =$ 3

- y – intercept: (0, -5)
- End behavior:

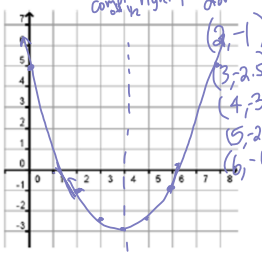
$x \to -\infty, f(x) \to$ $-\infty$

$x \to \infty, f(x) \to$ $-\infty$

Oct 14-1:42 PM

2. $f(x) = -2(x+2)^2 + 3$

3. $f(x) = \frac{1}{2}(x-4)^2 - 3$



- axis of symmetry: $x =$ 4
- vertex: (4 , -3)
- opens up or down? up
- maximum or minimum? min

at $y =$ -3

- y – intercept: (0, 5)
- End behavior:

$x \to -\infty, f(x) \to$ ∞

$x \to \infty, f(x) \to$ ∞

Oct 14-1:42 PM

$ax^2 + bx + c = 0$

How can you quickly determine if a quadratic function will open up or down based on the equation?

look at coefficient for x^2 → if neg → down
a<0
if pos → up
a>0
min

How can you determine the vertex of a quadratic function based only on the equation?

look at translation for x & y

Vertex form of a quadratic equation:

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

(h, k) vertex

(3, 4)

Oct 14-1:43 PM

Based only on the equations determine the different characteristics for each quadratic.

4. $y = \frac{1}{2}x^2 + 4$

- axis of symmetry: $x =$ 0
- vertex: (0 , 4)
- opens up or down? up
- maximum or minimum? min

at $y =$ 4

- y – intercept: (0, 4)
- End behavior:

$x \to -\infty, f(x) \to$ ∞

$x \to \infty, f(x) \to$ ∞

Oct 14-1:44 PM

Based only on the equations determine the different characteristics for each quadratic.

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

- axis of symmetry: $x =$ 0
- vertex: (0 , -3)
- opens up or down? up
- maximum or minimum? min

at $y =$ -3

- y – intercept: (0, -3)
- End behavior:

$x \to -\infty, f(x) \to$ ∞

$x \to \infty, f(x) \to$ ∞

6. $y = -5(x + 3)^2 + 6$ (negative)

- axis of symmetry: $x =$ -3
- vertex: (-3 , 6)
- opens up or down? down
- maximum or minimum? max

at $y =$ 6

- y – intercept: (0, -39)
- End behavior:

$x \to -\infty, f(x) \to$ $-\infty$

$x \to \infty, f(x) \to$ $-\infty$

Oct 14-1:44 PM

Write the equation of a quadratic in vertex form given the following.

7. Vertex$(-4, -24)$, Point on graph $(-5, -25)$ (x, y)

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

$f(x) = a(x--4)^2 + -24$

$f(x) = a(x+4)^2 - 24$

$-25 = a(-5+4)^2 - 24$

$-25 = a - 24$

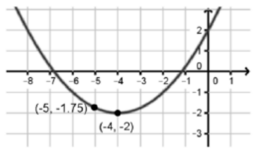
$-1 = a$

$f(x) = -(x+4)^2 - 24$

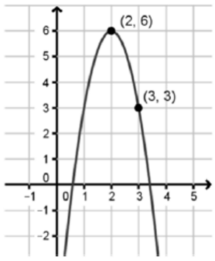
Oct 14-1:45 PM

Write the equation of a quadratic in vertex form given the following.

8.



9.



Oct 14-1:47 PM