

Name: Keef

Date: _____ Block: _____

Practice Assignment

Convert the following equations from vertex to standard form and find the y-intercept:

a. $y = (x-2)^2 - 8$

$$y = (x-2)(x-2) - 8$$

$$y = x^2 - 2x - 2x + 4 - 8$$

$$y = x^2 - 4x - 4$$

y-int (0, -4)

b. $y = 2(x+7)^2 + 1$

$$y = 2(x+7)(x+7) + 1$$

$$y = (2x+14)(x+7) + 1$$

$$y = 2x^2 + 14x + 14x + 98 + 1$$

$$y = 2x^2 + 28x + 99$$

Find the vertex of the following:

c. $y = 3x^2 - 18x + 17$ $a=3$ $b=-18$

$$x = \frac{-b}{2a} = \frac{18}{2(3)} = \frac{18}{6} = \boxed{3}$$

$$y = 3(3)^2 - 18(3) + 17$$

$y = \boxed{-10}$ $V(3, -10)$

d. $y = -x^2 + 8x - 10$ $a=-1$ $b=8$

$$x = \frac{-b}{2a} = \frac{-8}{2(-1)} = \frac{-8}{-2} = \boxed{4}$$

$$y = -(4)^2 + 8(4) - 10$$

$y = \boxed{6}$ $V(4, 6)$

Graph the following quadratic functions. You must show how you calculated the vertex.

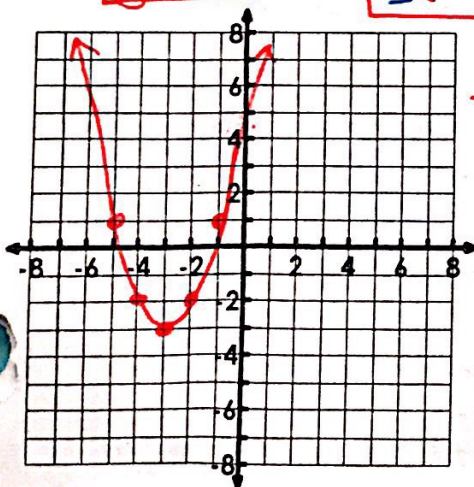
1. $y = x^2 + 6x + 6$ $a=1$ $b=6$

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

$$y = (-3)^2 + 6(-3) + 6$$

$$y = 9 - 18 + 6$$

$y = \boxed{-3}$ $V(-3, -3)$



$$\begin{array}{ccccccc} x: & -5 & -4 & \boxed{-3} & -2 & -1 \\ y: & 1 & -2 & \boxed{-3} & -2 & 1 \end{array}$$

2. $y = -x^2 - 4x - 3$ $a=-1$ $b=-4$

$$x = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = \frac{4}{-2} = \boxed{-2}$$

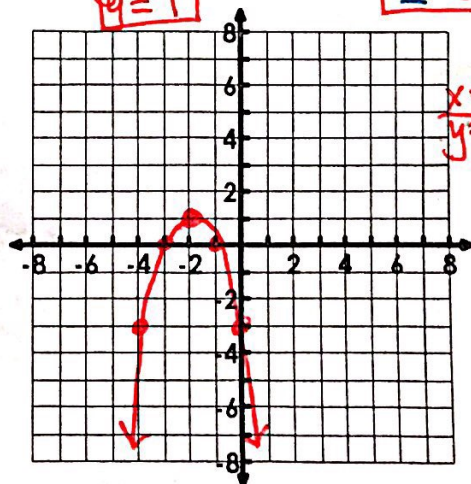
$$y = -(-2)^2 - 4(-2) - 3$$

$$y = -(4) + 8 - 3$$

$$y = -4 + 8 - 3$$

$$y = \boxed{1}$$

$V(-2, 1)$



$$\begin{array}{ccccccc} x: & -4 & -3 & \boxed{-2} & -1 & 0 \\ y: & -3 & 0 & \boxed{1} & 0 & -3 \end{array}$$

3. $y = 3x^2 + 6x$ $a = 3$ $b = 6$

4. $f(x) = -2x^2 - 4x + 1$ $a = -2$ $b = -4$

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

$x = \frac{-b}{2a} = \frac{-(-4)}{2(-2)} = \frac{4}{-4} = -1$

$y = 3(-1)^2 + 6(-1)$

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

$y = 3(1) - 6$

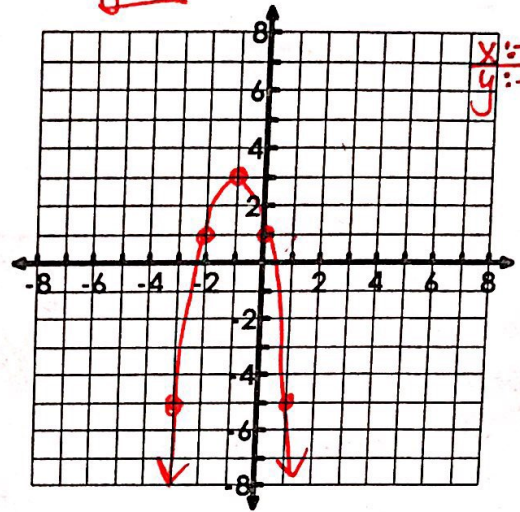
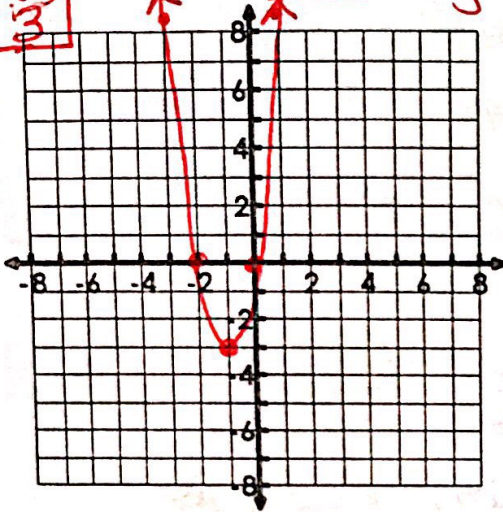
$y = -2 + 4 + 1$

$y = -3$

$V: (-1, -3)$

x:	-3	-2	-1	0	1
y:	9	0	-3	0	9

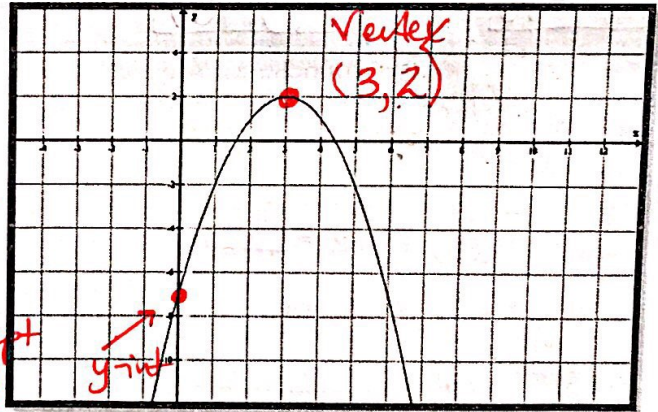
$V: (-1, 3)$



Match the graph of a quadratic to an equation (there will be two answers per graph):

- Equations:
- a. $y = (x + 2)^2$
 - b. $y = (x + 3)^2 + 2$
 - c. $y = -x^2 + 6x - 7$
 - d. $y = (x + 2)^2 + 1$
 - e. $y = x^2 + 4x + 4$
 - f. $y = -(x - 3)^2 + 2$

- vertex: (3, 2) +h, k
- reflects over x-axis (-a)
- y-intercept (0, -7) "c-value"



Answer (top graph)

$c \hat{=} f$

Answer (bottom graph)

$a \hat{=} e$

- Vertex (-2, 0)
- y-intercept (0, 4) "c-value"
- opens Up, so "a" is positive!

