Algebra 1 Unit 8: Quadratic Functions

Day 6 – Graphing in Standard Form

Practice Assignment

Name: Key

Date: _____ **Block:** _____

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

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

$y = 2(x^2 + 7x + 7x + 49) + 1$

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

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

y-int $(0,$

Find the vertex of the following:

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

a b c

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

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

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

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

a b c

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

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

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

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

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

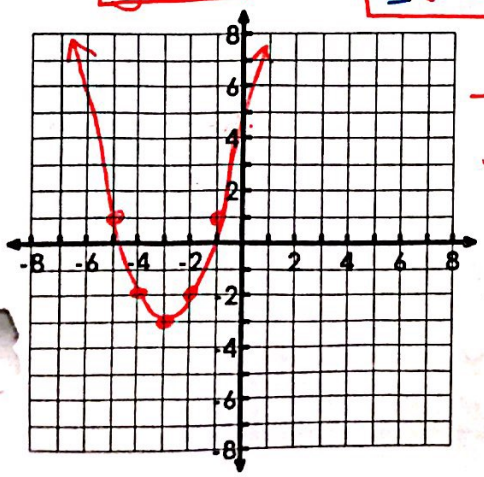
a b c

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

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

$y = 9 - 18 + 6$

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



x:	-5	-4	$\boxed{-3}$	-2	-1
y:	1	-2	$\boxed{-3}$	-2	1

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

a b c

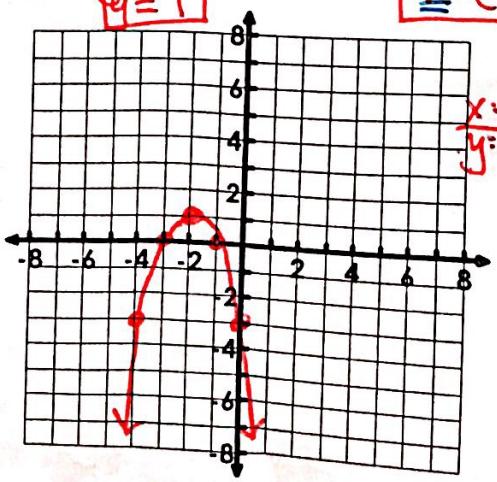
$x = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = \frac{4}{-2} = \boxed{-2}$

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

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

$y = -4 + 8 - 3$

$\boxed{y = 1}$ $\boxed{V: (-2,1)}$



x:	-4	-3	$\boxed{-2}$	-1
y:	-3	0	$\boxed{1}$	0

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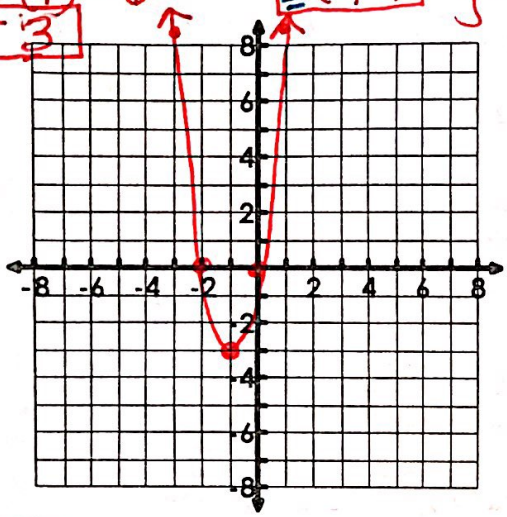
3. $y = 3x^2 + 6x$ $a=3$ $b=6$

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

$y = 3(-1)^2 + 6(-1)$
$= 3(1) - 6$
$\boxed{y = -3}$

$\boxed{V: (-1, -3)}$

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



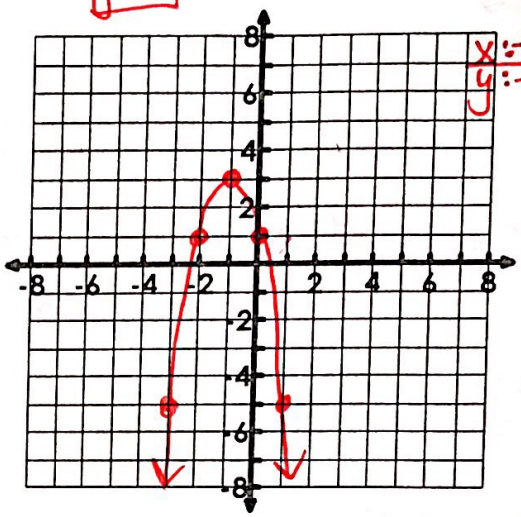
4. $f(x) = -2x^2 - 4x + 1$ $a=-2$ $b=-4$ c

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

$y = -2(-1)^2 - 4(-1) + 1$
$y = -2 + 4 + 1$
$\boxed{y = 3}$

$\boxed{V: (-1, 3)}$

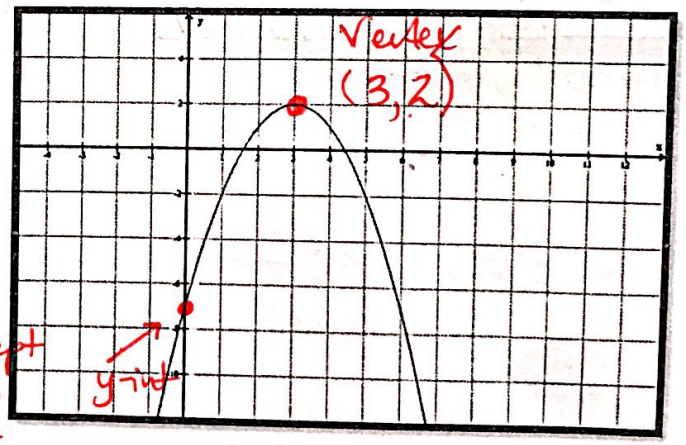
x:	-3	-2	-1	0	1
y:	-5	1	3	1	-5



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



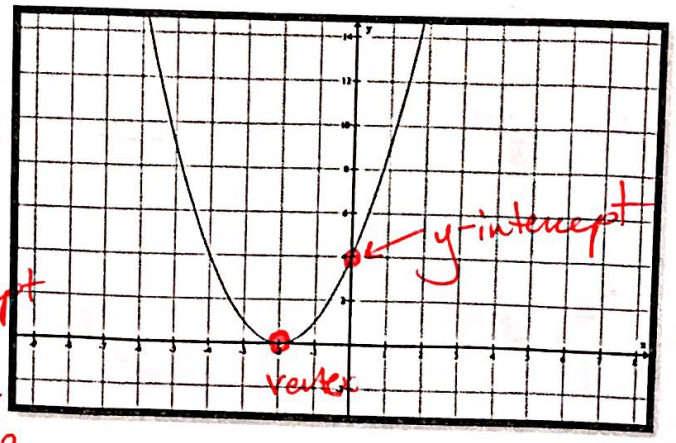
Answer (top graph)

c & f

Answer (bottom graph)

a & e

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



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