Name: _____ Hour: _____ Date: _____

Graphing Quadratics in Standard Form Practice I

DIRECTIONS: Sketch a graph of each of the following quadratics. Remember that you must include five points on each of your graphs.

RED POINTS ARE ONES FOUND BY SYMMETRY

1) $f(x) = x^2 - 6x + 9$

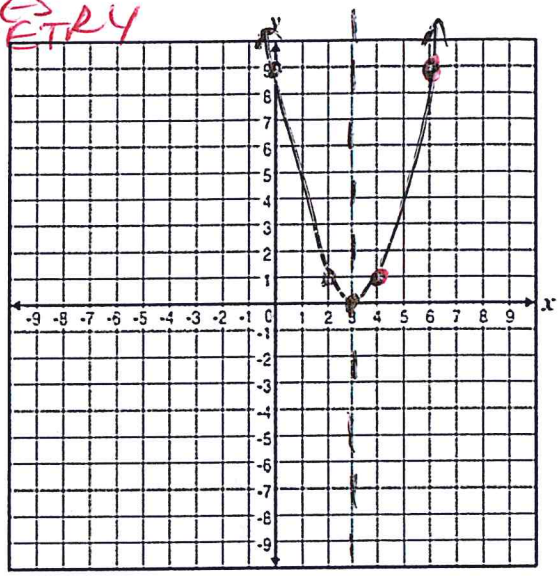
y-intercept: $(0, 9)$ $+(6, 9)$

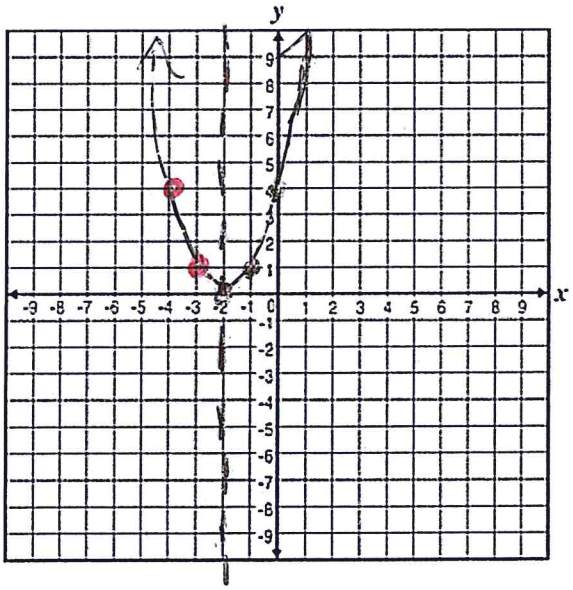
axis of symmetry: $x = \frac{-(-6)}{2(1)} = \frac{6}{2}$ $\boxed{x = 3}$

additional point: $f(1) = 1^2 - 6(1) + 9$, $1 - 6 + 9$, 4, $(1, 4)$ $+(5, 4)$

vertex: $(3, ?)$

$f(3) = 3^2 - 6(3) + 9$, $9 - 18 + 9 = 0$ $\boxed{V(3, 0)}$





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

y-intercept: $(0, 4)$ $+(-4, 4)$

axis of symmetry: $x = \frac{-4}{2(1)} = \frac{-4}{2}$ $\boxed{x = -2}$

additional point: $f(-1) = (-1)^2 + 4(-1) + 4$, $1 - 4 + 4$, 1, $(-1, 1)$ $+(-3, 1)$

vertex: $(-2, ?)$

$f(-2) = (-2)^2 + 4(-2) + 4$, $4 - 8 + 4$, 0 $\boxed{V(-2, 0)}$

3) $f(x) = x^2 - 6x - 8$

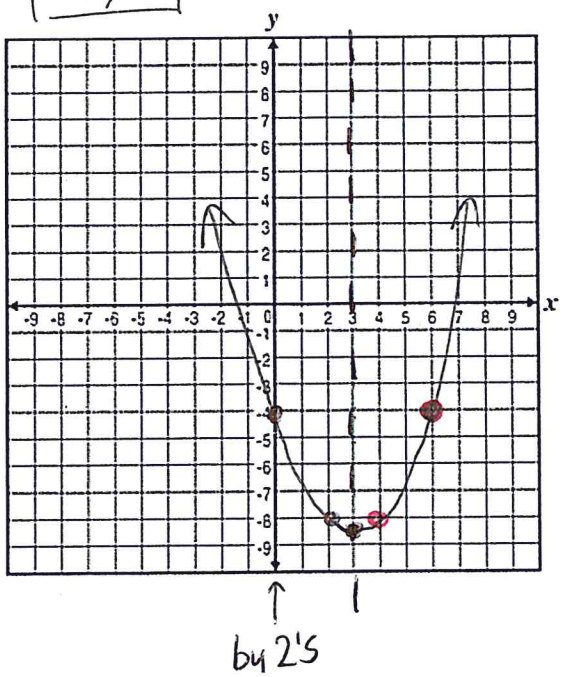
y-intercept: $(0, -8)$ $+(6, -8)$

axis of symmetry: $x = \frac{-(-6)}{2(1)} = \frac{6}{2}$ $\boxed{x = 3}$

additional point: $f(2) = 2^2 - 6(2) - 8$, $4 - 12 - 8$, -16, $(2, -16)$ $+(4, -16)$

vertex: $(3, ?)$

$f(3) = 3^2 - 6(3) - 8$, $9 - 18 - 8 = -17$ $\boxed{V(3, -17)}$



by 2's

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

y-intercept: $(0, 1)$ + $(2, 1)$

axis of symmetry:

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

additional point:

$f(3) = -3^2 + 2(3) + 1$

$-9 + 6 + 1$

-2

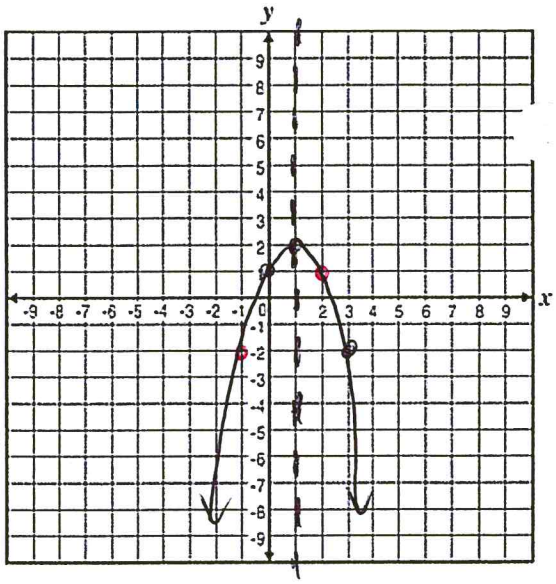
$(3, -2)$ + $(-1, -2)$

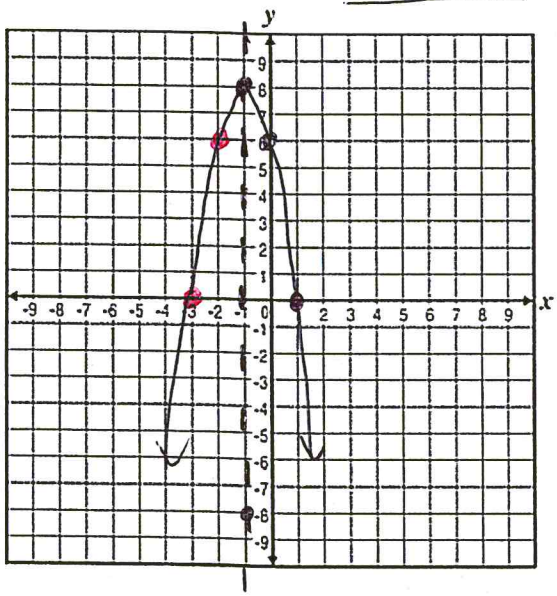
vertex: $(1, ?)$

$f(1) = -1^2 + 2(1) + 1$

$-1 + 2 + 1$

2 $\boxed{V(1, 2)}$





5) $f(x) = -2x^2 - 4x + 6$

y-intercept: $(0, 6)$ + $(-2, 6)$

axis of symmetry:

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

additional point:

$f(1) = -2(1)^2 - 4(1) + 6$

$-2 - 4 + 6$

0

$(1, 0)$ + $(-3, 0)$

vertex: $V(-1, ?)$

$f(-1) = -2(-1)^2 - 4(-1) + 6$

$-2 + 4 + 6$

8 $\boxed{V(-1, 8)}$

6) $f(x) = 2x^2 + 4x - 6$

y-intercept: $(0, -6)$ + $(-2, -6)$

axis of symmetry:

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

additional point:

$f(1) = 2(1)^2 + 4(1) - 6$

$2 + 4 - 6$

0

$(1, 0)$ + $(-3, 0)$

vertex:

$V(-1, ?)$

$f(-1) = 2(-1)^2 + 4(-1) - 6$

$2 - 4 - 6$

-8 $\boxed{V(-1, -8)}$