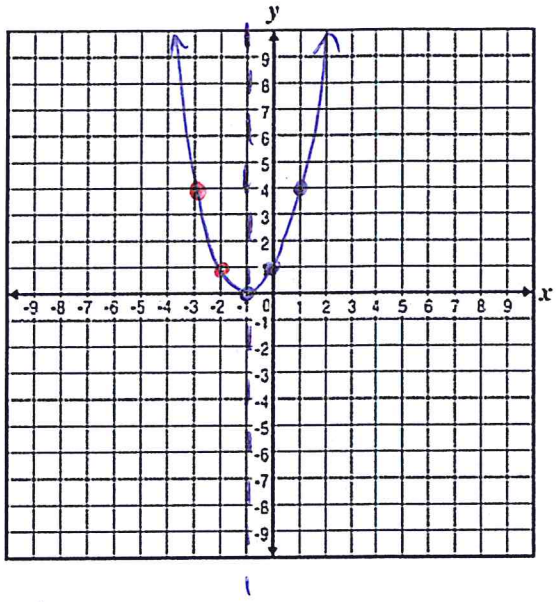
ALG 2

Name: Key - Points found by symmetry in red Hour: Date:

Graphing Quadratics in Standard Form Practice II

Graph the following quadratics. Be sure to include five points. Make sure to identify the y-intercept, axis of symmetry, and vertex.

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



y-intercept: (0, 1) & (-2, 1)

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

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

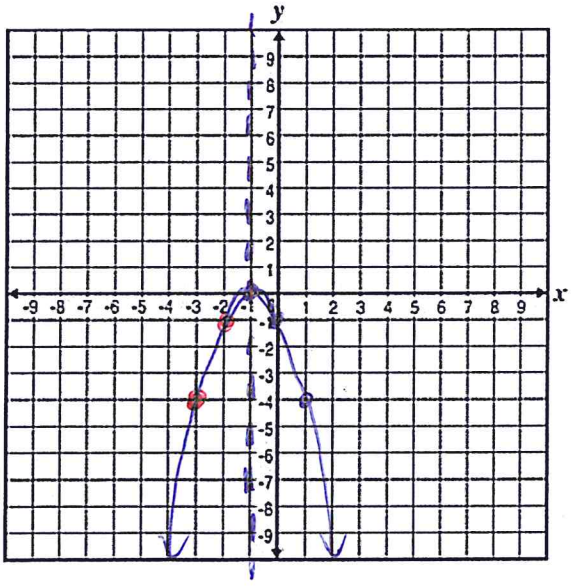
& (-3, 4)

vertex: V(-1, ?)

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

$1 - 2 + 1 = 0$ $\boxed{V(-1, 0)}$

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



y-intercept: (0, -1) & (-2, -1)

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

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

$-1 - 2 - 1 = -4$

(1, -4)

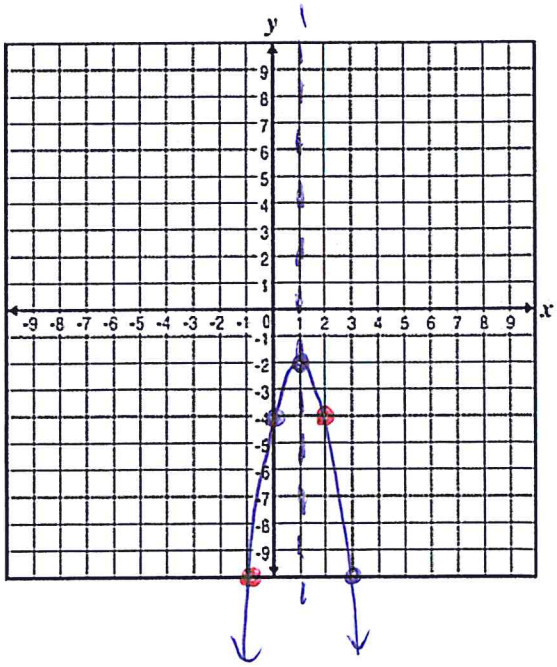
& (-3, -4)

vertex: (-1, ?)

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

$-1 + 2 - 1 = 0$ $\boxed{V(-1, 0)}$

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



y-intercept: (0, -4) & (2, -4)

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

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

$-18 + 12 - 4$

-10

(3, -10)

& (-1, 10)

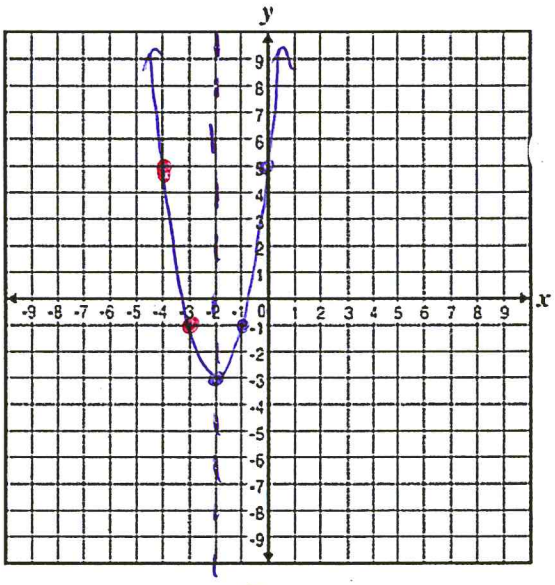
vertex: (1, ?)

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

$-2 + 4 - 4$

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

4) $f(x) = 2x^2 + 8x + 5$



y-intercept: $(0,5)$ & $(-4,5)$

axis of symmetry:

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

additional point:

$f(-1) = 2(-1)^2 + 8(-1) + 5$

$2 - 8 + 5$

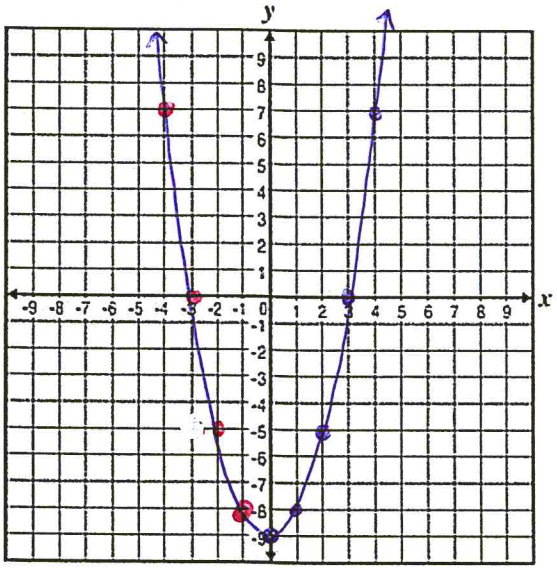
-1

$(-1,-1)$ & $(-3,-1)$

vertex: $V(-2, ?)$

$f(-2) = 2(-2)^2 + 8(-2) + 5$

$8 - 16 + 5 = -3$ $V(-2,-3)$



5) $f(x) = x^2 - 9$ $f(x) = x^2 + 0x - 9$

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

axis of symmetry:

$x = \frac{-0}{2(1)} = \frac{0}{2}$ $\boxed{x=0}$

vertex: $(0,-9)$ (already found)

Since vertex = y-int Need 2 pairs of additional points:

$f(1) = 1^2 - 9 = 1 - 9 = -8$

$(1,-8)$ & $(-1,-8)$

$f(2) = 2^2 - 9 = 4 - 9 = -5$

$(2,-5)$ $(-2,-5)$

or

$(3,0)$ & $(-3,0)$

$(4,7)$ & $(-4,7)$

SLOT Practice – Quadratic Formula

1) Fill in the blanks to complete the quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Use the quadratic formula to solve the following:

2) $4a^2 + 6a - 4 = 0$ $a=4, b=6, c=-4$

$a = \frac{-6 \pm \sqrt{6^2 - 4(4)(-4)}}{2(4)}$

$a = \frac{-6 \pm \sqrt{36+64}}{8}$

$a = \frac{-6 \pm \sqrt{100}}{8} = \frac{-6 \pm 10}{8}$ → $\frac{4}{8} = \frac{1}{2}$, $\frac{-16}{8} = -2$

(2 rational sol'ns)

3) $3v^2 + v - 1 = 0$ $a=3, b=1, c=-1$

$x = \frac{-1 \pm \sqrt{1^2 - 4(3)(-1)}}{2(3)} = \frac{-1 \pm \sqrt{1+12}}{6}$

$x = \frac{-1 \pm \sqrt{13}}{6}$

2 irrational sol'ns