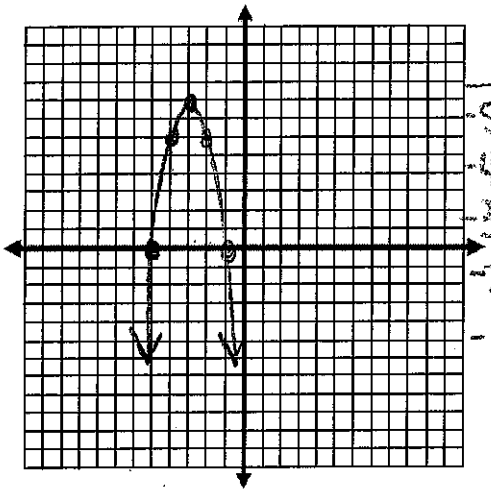
GSE Algebra I
Homework: Graphing and Converting Review

Name: _____
Date: _____ Period: _____

Graphing Quadratics in Vertex Form Practice

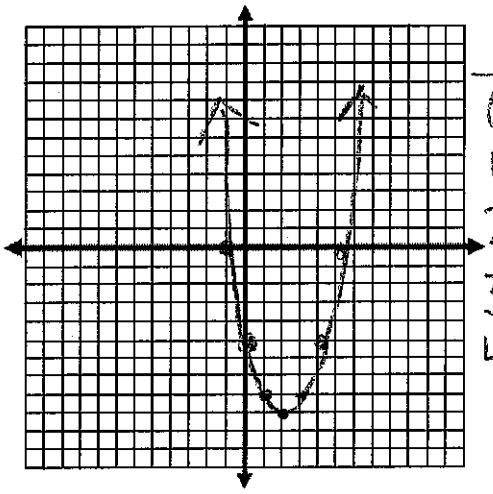
1. $f(x) = -2(x+3)^2 + 8$



-5	0
-4	6
-3	8
-2	6
-1	0

Vertex: (-3, 8) Axis of Symmetry: $x = -3$
Interval of Increase: $-\infty < x < -3$
Interval of Decrease: $-3 < x < \infty$
Extrema: max Max/Min Value: $y = 8$
Domain: $\mathbb{R}$ Range: $-\infty < y \leq 8$
Y-Intercept: (0, -10) Zeroes: $x = -5, -1$

2. $f(x) = (x-2)^2 - 9$



0	-5
1	-8
2	-9
3	-8
4	-5

Vertex: (2, -9) Axis of Symmetry: $x = 2$
Interval of Increase: $2 < x < \infty$
Interval of Decrease: $-\infty < x < 2$
Extrema: min Max/Min Value: $y = -9$
Domain: $\mathbb{R}$ Range: $-9 \leq y < \infty$
Y-Intercept: (0, -5) Zeroes: $x = -1, 5$

Convert from vertex form to standard form. Then tell which direction graph opens and the y-intercept.

3. $f(x) = (x-3)^2 + 7$

$f(x) = (x-3)(x-3) + 7$

$f(x) = (x^2 - 6x + 9) + 7$

$f(x) = x^2 - 6x + 16$

×	x	-3
x	x^2	$-3x$
-3	$-3x$	9

Graph Opens: up
Y-intercept: (0, 16)

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

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

$f(x) = -2(x^2 + 8x + 16) - 5$

$f(x) = -2x^2 - 16x - 32 - 5$

$f(x) = -2x^2 - 16x - 37$

×	x	$+4$
x	x^2	$4x$
$+4$	$4x$	16

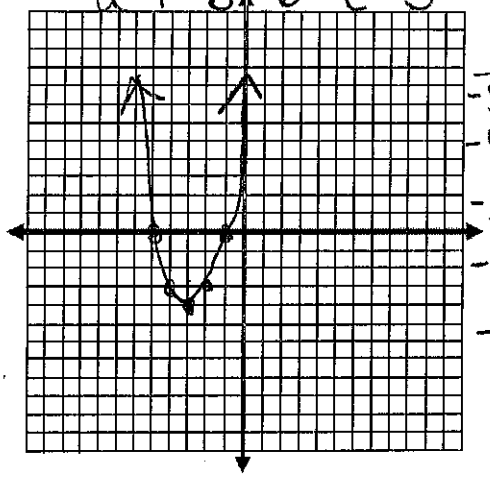
Graph Opens: down
Y-intercept: (0, -37)

Graphing Quadratics from Standard Form Practice

5. $f(x) = x^2 + 6x + 5$

$a=1 \quad b=6 \quad c=5$

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



x	y
-5	0
-4	-3
-3	-4
-2	-3
-1	0

Vertex: $(-3,-4)$ Axis of Symmetry: $x=-3$

Interval of Increase: $-3 < x < \infty$

Interval of Decrease: $-\infty < x < -3$

Extrema: min Max/Min Value: $y=-4$

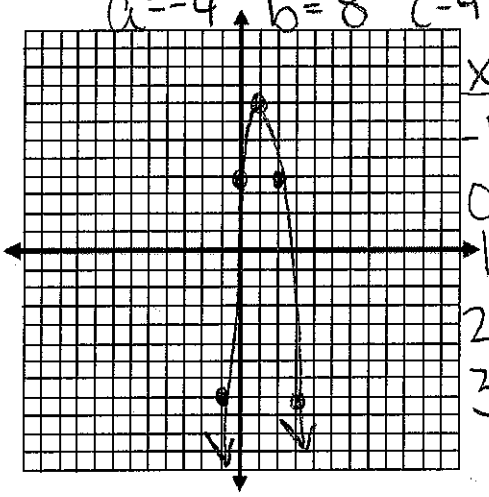
Domain: $\mathbb{R}$ Range: $-4 \leq y < \infty$

Y-Intercept: $(0,5)$ Zeroes: $x=-5,-1$

6. $f(x) = -4x^2 + 8x + 4$

$a=-4 \quad b=8 \quad c=4$

$h: \frac{-(8)}{2(-4)} = 1$



x	y
-1	-8
0	4
1	8
2	4
3	-8

Vertex: $(1,8)$ Axis of Symmetry: $x=1$

Interval of Increase: $-\infty < x < 1$

Interval of Decrease: $1 < x < \infty$

Extrema: max Max/Min Value: $y=8$

Domain: $\mathbb{R}$ Range: $-\infty < y \leq 8$

Y-Intercept: $(0,4)$ Zeroes: $x=-.5, 2.5$

Convert from standard to vertex form by using $x = \frac{-b}{2a}$. Then, give the axis of symmetry and vertex.

7. $f(x) = x^2 + 6x + 9$

$a=1 \quad b=6 \quad c=9$

$h: \frac{-6}{2(1)} = -3$

$k: (-3)^2 + 6(-3) + 9 = 0$

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

Vertex: $(-3,0)$

Axis of Symmetry: $x=-3$

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

$a=-2 \quad b=-8 \quad c=5$

$h: \frac{-(-8)}{2(-2)} = -2$

$k: -2(-2)^2 - 8(-2) + 5 = 13$

$f(x) = -2(x+2)^2 + 13$

Vertex: $(-2,13)$

Axis of Symmetry: $x=-2$