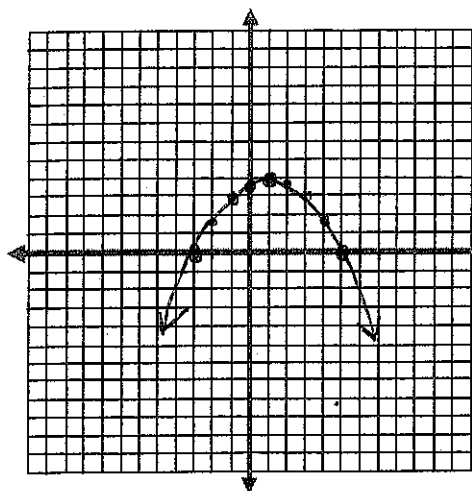


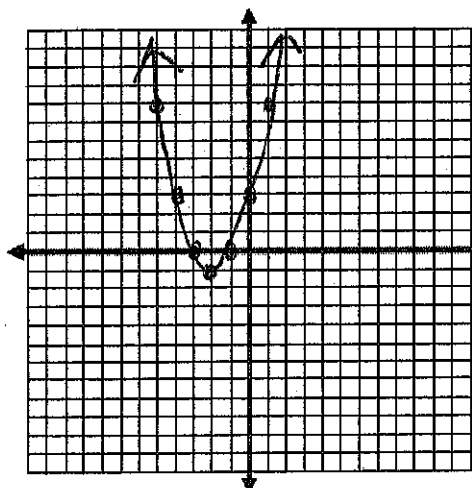
Graphing Quadratics from Vertex Form Practice

$$f(x) = -\frac{1}{4}(x-1)^2 + 4$$



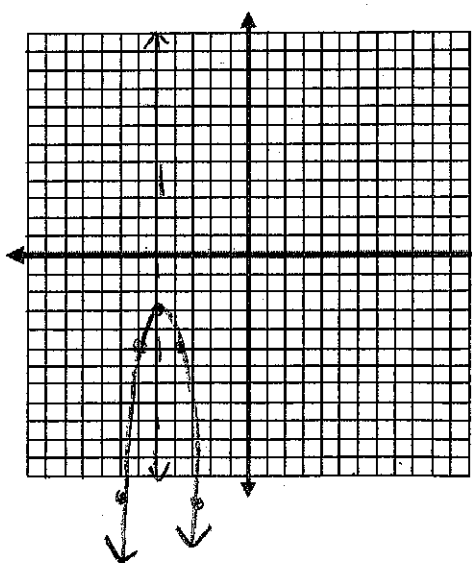
Vertex: <u>(1, 4)</u>	Axis of Symmetry: <u>x = 1</u>
Interval of Increase: <u>$-\infty < x < 1$</u>	
Interval of Decrease: <u>$1 < x < \infty$</u>	
Extrema: <u>max</u>	Max/Min Value: <u>4</u>
Domain: <u>\mathbb{R} or $-\infty < x < \infty$</u>	Range: <u>$-\infty < y \leq 4$</u>
Y-Intercept: <u>(0, 3.75)</u>	Zeros: <u>x = -3, 5</u>

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



Vertex: <u>(-2, -1)</u>	Axis of Symmetry: <u>x = -2</u>
Interval of Increase: <u>$-2 < x < \infty$</u>	
Interval of Decrease: <u>$-\infty < x < -2$</u>	
Extrema: <u>min</u>	Max/Min Value: <u>-1</u>
Domain: <u>\mathbb{R} or $-\infty < x < \infty$</u>	Range: <u>$-1 \leq y < \infty$</u>
Y-Intercept: <u>(0, 3)</u>	Zeros: <u>x = -3, -1</u>

$$f(x) = -2(x+5)^2 - 3$$



Vertex: <u>(-5, -3)</u>	Axis of Symmetry: <u>x = -5</u>
Interval of Increase: <u>$-\infty < x < -5$</u>	
Interval of Decrease: <u>$-5 < x < \infty$</u>	
Extrema: <u>max</u>	Max/Min Value: <u>-3</u>
Domain: <u>\mathbb{R} or $-\infty < x < \infty$</u>	Range: <u>$-\infty < y \leq -3$</u>
Y-Intercept: <u>(0, -53)</u>	Zeros: <u>none</u>

$$-2(0+5)^2 - 3 =$$

Converting Between Standard and Vertex Form

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

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

$$(x+4)(x+4) + 5$$

$$x^2 + 8x + 16 + 5$$

$$f(x) = x^2 + 8x + 21$$

Graph Opens: **up**
Y-intercept: $(0, 21)$

	x	$+4$	
x	x^2	$4x$	
$+4$	$4x$	16	

$$x^2 + 4x + 4x + 16$$

$$x^2 + 8x + 16$$

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

$$-(x+3)(x+3) - 2$$

$$-(x^2 + 6x + 9) - 2$$

$$-x^2 - 6x - 9 - 2$$

$$f(x) = -x^2 - 6x - 11$$

Graph Opens: **down**
Y-intercept: $(0, -11)$

	x	$+3$	
x	x^2	$3x$	
$+3$	$3x$	9	

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

$$2(x-2)(x-2) - 3$$

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

$$2x^2 - 8x + 8 - 3$$

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

Graph Opens: **up**
Y-intercept: $(0, 5)$

	x	-2	
x	x^2	$-2x$	
-2	$-2x$	4	