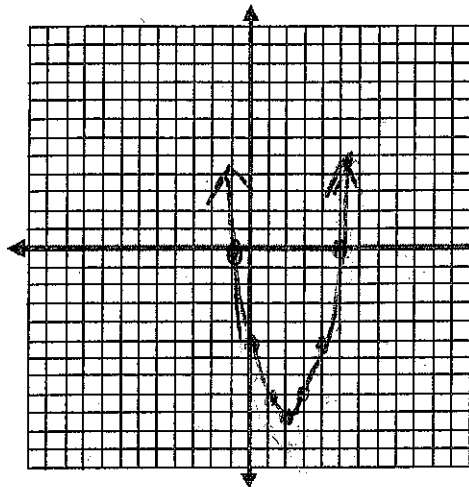


Graphing Quadratics from Standard Form Practice

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

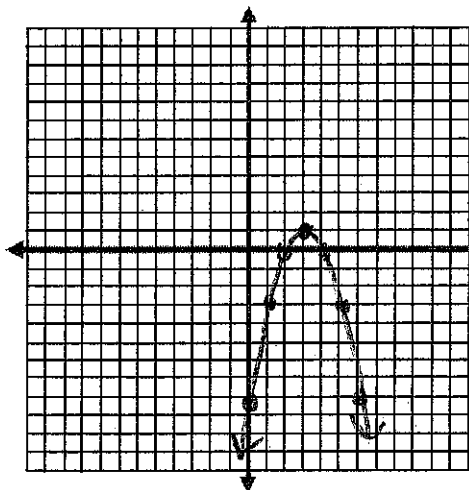
$\frac{4}{2} = 2$ $f(2) = (2)^2 - 4(2) - 5 = -9$



x	$f(x)$	Vertex: <u>(2, -9)</u>	Axis of Symmetry: <u>X=2</u>
0	-5	Interval of Increase: <u>$2 < x < \infty$</u>	
1	-8	Interval of Decrease: <u>$-\infty < x < 2$</u>	
2	-9	Extrema: <u>min</u>	Max/Min Value: <u>-9</u>
3	-8	Domain: <u>\mathbb{R}</u>	Range: <u>$-9 \leq y < \infty$</u>
4	-8	Y-Intercept: <u>(0, -5)</u>	Zeros: <u>X=-1, 5</u>

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

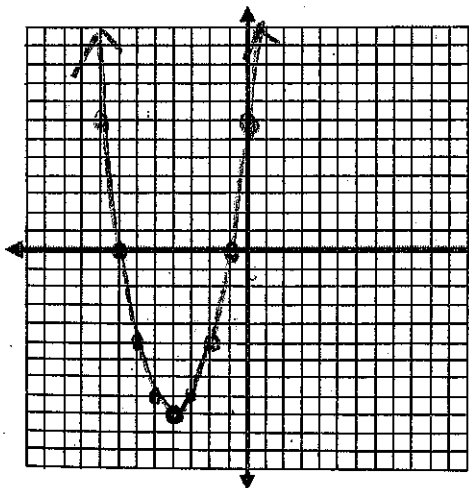
$-\frac{6}{-2} = 3$ $f(3) = -(3)^2 + 6(3) - 8 = 1$



x	$f(x)$	Vertex: <u>(3, 1)</u>	Axis of Symmetry: <u>X=3</u>
1	-3	Interval of Increase: <u>$-\infty < x < 3$</u>	
2	0	Interval of Decrease: <u>$3 < x < \infty$</u>	
3	1	Extrema: <u>max</u>	Max/Min Value: <u>1</u>
4	0	Domain: <u>\mathbb{R}</u>	Range: <u>$-\infty < y \leq 1$</u>
5	-3	Y-Intercept: <u>(0, -8)</u>	Zeros: <u>X=2, 4</u>

3. $f(x) = x^2 + 8x + 7$

$-\frac{8}{2} = -4$ $f(-4) = (-4)^2 + 8(-4) + 7 = -9$



x	$f(x)$	Vertex: <u>(-4, -9)</u>	Axis of Symmetry: <u>X=-4</u>
		Interval of Increase: <u>$-4 < x < \infty$</u>	
		Interval of Decrease: <u>$-\infty < x < -4$</u>	
		Extrema: <u>min</u>	Max/Min Value: <u>-9</u>
		Domain: <u>\mathbb{R}</u>	Range: <u>$-9 \leq y < \infty$</u>
		Y-Intercept: <u>(0, 7)</u>	Zeros: <u>X=-7, -1</u>

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

$$a=1 \quad b=4 \quad c=3$$

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

$$h: \frac{-b}{2a} = \frac{-4}{2} = -2$$

$$k: f(-2) = (-2)^2 + 4(-2) + 3 = -1$$

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

Vertex: $(-2, -1)$

Axis of Symmetry: $x = -2$

$$a=-1 \quad b=-2 \quad c=5$$

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

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

$$k: f(-1) = -(-1)^2 - 2(-1) + 5 = 6$$

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

Vertex: $(-1, 6)$

Axis of Symmetry: $x = -1$

$$a=2 \quad b=-8 \quad c=17$$

$$6. f(x) = 2x^2 - 8x + 17$$

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

$$k: f(2) = 2(2)^2 - 8(2) + 17 = 9$$

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

Vertex: $(2, 9)$

Axis of Symmetry: $x = 2$