

12.1 Graphing Quadratics in Standard Form

PRACTICE

1. $a=1$
 $b=6$
 $c=2$

Axis of symmetry: $x = \frac{-b}{2a}$
 $x = \frac{-6}{2(1)} = -3$

Vertex: $(-3, ?)$
 $y = (-3)^2 + 6(-3) + 2$
 $y = 9 - 18 + 2$
 $y = -7$
Vertex: $(-3, -7)$

Equation: $y = x^2 + 6x + 2$

x	y
-6	2
-5	-3
-4	-6
-3	-7
-2	-6
-1	-3
0	2

2. $a=-2$
 $b=7$
 $c=1$

Axis of symmetry: $x = \frac{-b}{2a}$
 $x = \frac{-7}{2(-2)} = \frac{7}{4} = 1.75$

Vertex: $(\frac{7}{4}, ?)$
 $f(\frac{7}{4}) = -2(\frac{7}{4})^2 + 7(\frac{7}{4}) + 1$
 $f(\frac{7}{4}) = \frac{57}{8} = 7.125$
Vertex: $(1.75, 7.125)$

Equation: $f(x) = -2x^2 + 7x + 1$

x	f(x)
-1	-8
0	1
1	6
2	7
3	4
4	-3

3. $a=4$
 $b=8$
 $c=-30$

Axis of symmetry: $x = \frac{-b}{2a}$
 $x = \frac{-8}{2(4)} = -1$

Vertex: $(-1, ?)$
 $y = 4(-1)^2 + 8(-1) - 30$
 $y = -34$
Vertex: $(-1, -34)$

Equation: $y = 4x^2 + 8x - 30$

x	y
-3	-18
-2	-30
-1	-34
0	-30
1	-10
2	2
3	30

4. $a = -3$
 $b = -2$
 $c = -5$
 Axis of symmetry

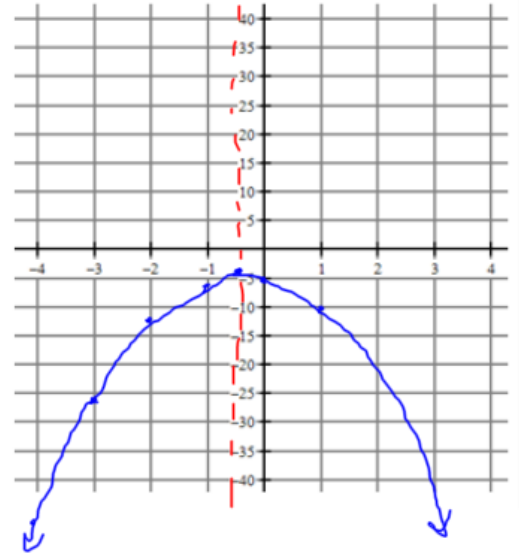
$$f(x) = -3x^2 - 2x - 5$$

$$x = \frac{-b}{2a}$$

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

Vertex $(-\frac{1}{3}, ?)$
 $f(-\frac{1}{3}) = -3(-\frac{1}{3})^2 - 2(-\frac{1}{3}) - 5$
 $f(-\frac{1}{3}) = -\frac{14}{3} \text{ or } -4.\bar{6}$
 $(-0.\bar{3}, -4.\bar{6})$

x	f(x)
-4	-45
-3	-26
-2	-13
-1	-6
0	-5
1	-10



5. $a = 1$
 $b = 3$
 $c = 0$
 Axis of symmetry

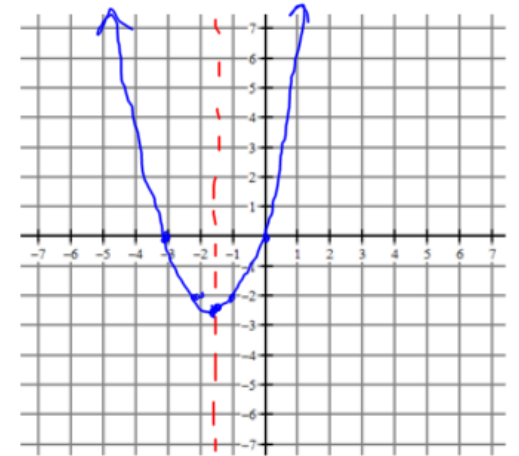
$$f(x) = x^2 + 3x$$

$$x = \frac{-b}{2a}$$

$$x = \frac{-3}{2(1)} = -\frac{3}{2} \text{ or } -1.5$$

Vertex $(-\frac{3}{2}, ?)$
 $f(-\frac{3}{2}) = (-\frac{3}{2})^2 + 3(-\frac{3}{2})$
 $f(-\frac{3}{2}) = -\frac{9}{4} \text{ or } -2.25$
 $(-1.5, -2.25)$

x	f(x)
-3	0
-2	-2
-1	-2
0	0
1	4
2	10



6. $a = -\frac{1}{2}$
 $b = 9$
 $c = 4$
 Axis of symmetry

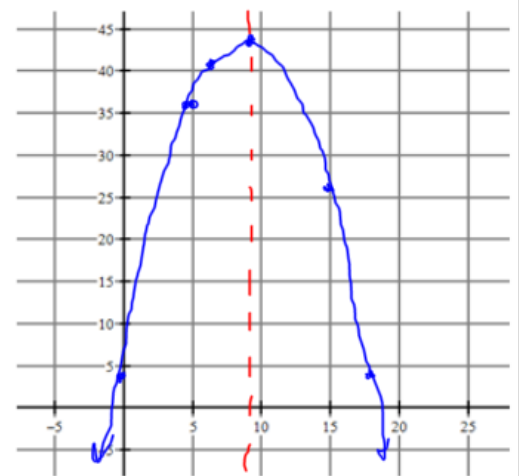
$$y = -\frac{1}{2}x^2 + 9x + 4$$

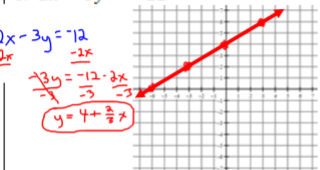
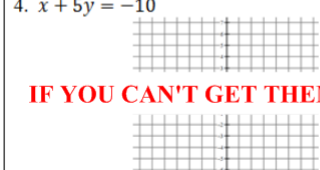
$$x = \frac{-b}{2a}$$

$$x = \frac{-9}{2(-\frac{1}{2})} = \frac{-9}{-1} = 9$$

Vertex $(9, ?)$
 $y = -\frac{1}{2}(9)^2 + 9(9) + 4$
 $y = 44.5$
 $(9, 44.5)$

x	y
0	4
5	36.5
7	42.5
15	26.5
18	4
25	-83.5



SKILLZ REVIEW		
GRAPH	FACTOR	RADICALS
1. $2x - 3y = -12$ 	2. $4x^2 + 2x$ $2x(2x + 1)$	3. Simplify $\sqrt{40}$ $\sqrt{4 \cdot 10}$ $2\sqrt{10}$
4. $x + 5y = -10$ 	5. $x^2 - 5x - 24$	6. Simplify $\frac{3}{\sqrt{5}}$
TRY THESE! IF YOU CAN'T GET THEM, WATCH THE SKILLZ REVIEW VIDEO FOR HELP!		