Day 16

Your Name

Mrs. Theo

2/11/21

Lesson 2.2

Quadratic

Standard Form

Standard Form Features to graph:

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

$a=2$ $b=8$ $c=6$

Y-Intercept: $(0,c) \rightarrow (0,6)$

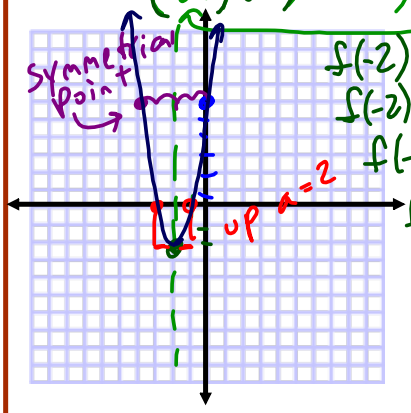
Dilation: $a=2$ Vertical stretch by 2

Reflection/Opens: up or down (a is positive)

Axis of Symmetry: $x = \frac{-b}{2a} = \frac{-(8)}{2(2)}$ Vertical line

Vertex: $(-2,-2)$ $x=-2$

Must graph 5 points



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

$f(-2) = 2 \cdot 4 - 16 + 6$

$f(-2) = 8 - 16 + 6$

$f(-2) = -2$

$g(x) = -x^2 + 2x + 4$

$a=-1$ $b=2$ $c=4$

Y-Intercept: $(0,c) \rightarrow (0,4)$

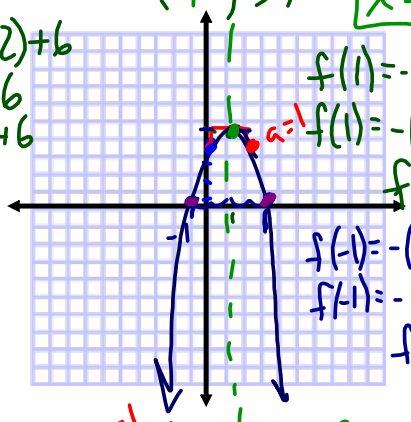
Dilation: $a=-1$ No dilation

Reflection/Opens: up or down (a is negative)

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

$x=1$ (=h)

Vertex: $(1,5)$



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

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

$f(1) = 5$

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

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

$f(-1) = 1$

$h(x) = -3x^2 - 11x - 4$

$a=-3$ $c=-4$

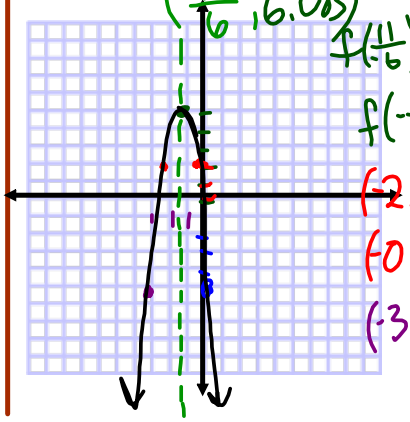
Y-Intercept: $(0,c) \rightarrow (0,-4)$

Dilation: $a=3$ Vertical stretch by 3

Reflection/Opens: up or down (a is negative)

Axis of Symmetry: $x = \frac{-b}{2a} = \frac{-(-11)}{2(-3)} = -1.83$ Yes

Vertex: $\left(\frac{-11}{6}, 6.083\right)$



$f\left(\frac{-11}{6}\right) = -3\left(\frac{-11}{6}\right)^2 - 11\left(\frac{-11}{6}\right) - 4$

$f\left(\frac{-11}{6}\right) = 6.083$

$(-2.83, 3.083)$

$(-0.83, 3.083)$

$(-3.66, -4)$

★ $y = x^2 - 6x$

$a=1$ $b=-6$ $c=0$

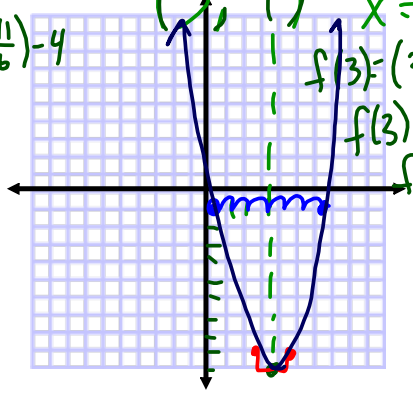
Y-Intercept: $(0,c) \rightarrow (0,0)$ +0

Dilation: $a=1$ No dilation

Reflection/Opens: up or down

Axis of Symmetry: $x = \frac{-b}{2a} = \frac{-(-6)}{2(1)}$ None

Vertex: $(3,-9)$ $x=3$



$f(3) = (3)^2 + 6(3)$

$f(3) = 9 - 18$

$f(3) = -9$

Homework: Standard Form Features to graph:

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

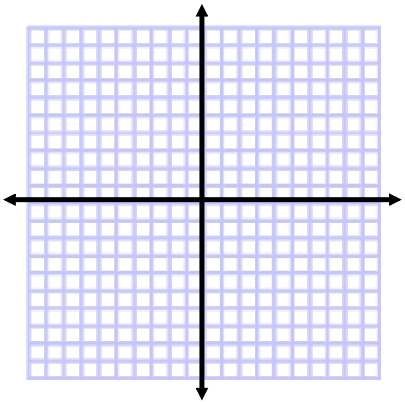
Y-Intercept:

Dilation:

Reflection/Opens: up or down

Axis of Symmetry:

Vertex:



2. $g(x) = -x^2 + 7x - 8$

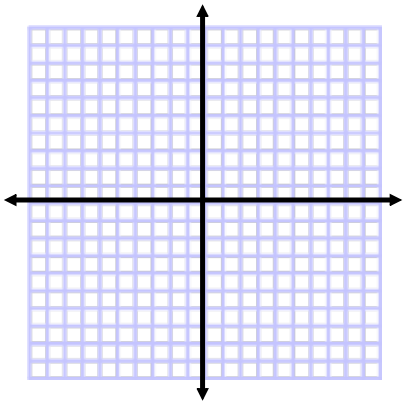
Y-Intercept:

Dilation:

Reflection/Opens: up or down

Axis of Symmetry:

Vertex:



3. $f(x) = 0.5x^2 - 3x$

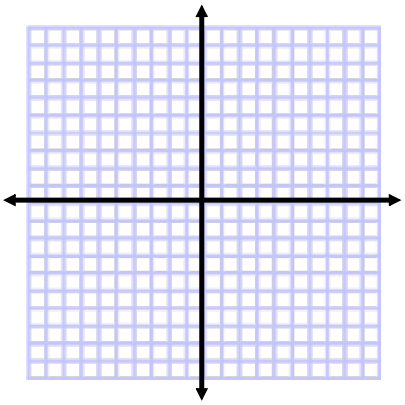
Y-Intercept:

Dilation:

Reflection/Opens: up or down

Axis of Symmetry:

Vertex:



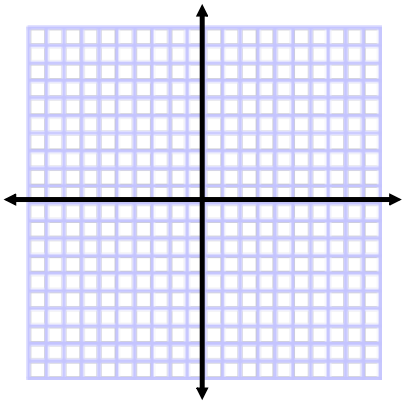
4. $f(x) = -x^2 + 7$

Y-Intercept:

Axis of Symmetry:

Vertex:

Transformations:



Homework **Key**: Standard Form Features to graph:

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

Y-Intercept: (0,6)

Stretch: a=-2 stretch by 2

Reflection/Opens: up or down a is neg.

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

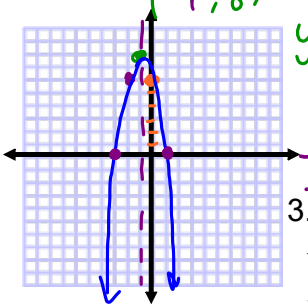
Vertex: (-1, 8)

$y = -2(-1)^2 - 4(-1) + 6$

$y = 8$

$f(1) = -2(1)^2 - 4(1) + 6$

$f(1) = 0$



2. $g(x) = -x^2 + 7x - 8$

Y-Intercept: (0,-8)

Stretch: a=-1 No Dilation

Reflection/Opens: up or down a is neg.

Axis of Symmetry: $x = \frac{-(7)}{2(-1)} = 3.5$

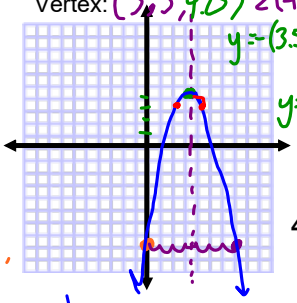
Vertex: (3.5, 4.25)

$y = -(3.5)^2 + 7(3.5) - 8$

$y = 4.25$

(4.5, 3.25)

(2.5, 3.25)



3. $f(x) = 0.5x^2 - 3x + 0$

Y-Intercept: (0,0)

Stretch: a = 0.5 shrink by $\frac{1}{2}$

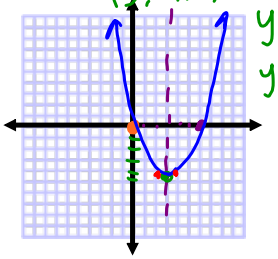
Reflection/Opens: up or down a is positive

Axis of Symmetry: $x = \frac{-(-3)}{2(0.5)} = \frac{3}{1} = 3$

Vertex: (3, -4.5)

$y = 0.5(3)^2 - 3(3)$

$y = -4.5$



4. $f(x) = -x^2 + 7 = -1x^2 + 0x + 7$

$a \cdot x^2 + b \cdot x + c$ b=0

Y-Intercept: (0,7)

Stretch: a=-1 No Dilation

Reflection/Opens: up or down

Axis of Symmetry: $x = \frac{-b}{2a} = \frac{-0}{2(-1)} = 0$

Vertex: (0,7)

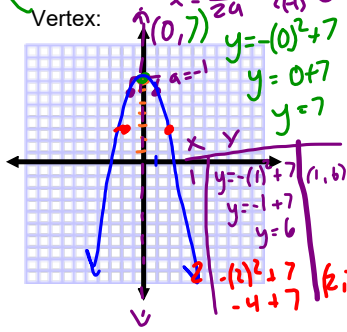
$y = -(0)^2 + 7$

$y = 0 + 7$

$y = 7$

Since if b=0 Yes

a is neg



$y = -(1) + 7$

$y = -1 + 7$

$y = 6$

(1,6)

$-(2)^2 + 7$

$-4 + 7$

(2,3)