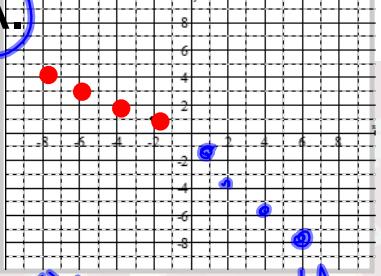
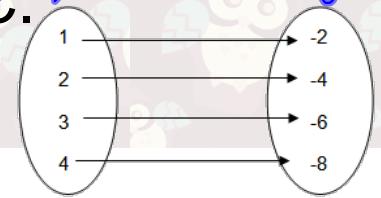


Quadratics Day 1

<p>Agenda</p> <p>Warm-Up</p> <p>Notes (book)</p> <p>HW - Practice (2 pages)</p>	<p>Warm-Up Wednesday</p> <ol style="list-style-type: none"> 1. Simplify: $(2x+4)(3x-1)$ $\begin{array}{r} 2x + 4 \\ \times 3x - 1 \\ \hline 6x^2 - 2x + 12x - 4 \\ \hline 6x^2 + 10x - 4 \end{array}$ <ol style="list-style-type: none"> 2. The function $f(x) = \{(1, -2), (2, -4), (3, -6), (4, -8)\}$ can be represented in several other ways. Which of the following is NOT a correct representation of the function $f(x)$? <p>A. </p> <p>B. counting x is a <u>natural number</u> between 0 and 5 and y is equal to double the negative of x.</p> <p>C. </p> <p>D. ✓ $y = -2x$ and the domain is $\{1, 2, 3, 4\}$ ✗</p>
<p>Reminders</p> <p>5.4/PR/Test</p> <p>Corrections due Friday</p> <p>EOC Simulation Wed 4/2</p>	

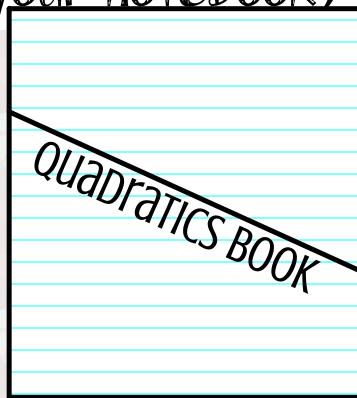
Quadratics Day 1

Quadratic Functions Book

Your notes for the next 3 days are in the pink & white book.
Arrange the pages in numerical order, then fold in half.
INT:
the pink page goes on the outside.

Make a pocket on page 109
(next page in your notebook)

Using the next 2 pages in
your notebook, make a pocket.
Fold one page diagonally, then
glue its edges onto the other
page. Your booklet will go in
this pocket.



Glue

Quadratic Parent Function - page 1

also known as a parabola

Quadratic Function:

a function that forms a special parabola that curves at the origin, opening upwards

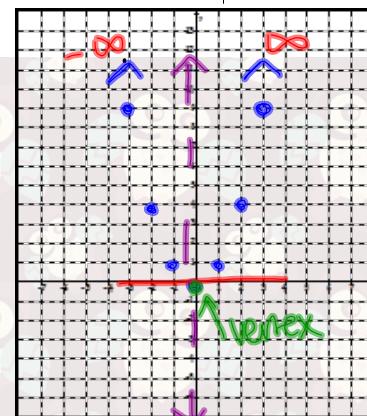
Equation

$$y = x^2$$

Table

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

Graph



Domain: All real #s
 \mathbb{R}

Range: $0 \leq y < \infty$
 $y \geq 0$

Vertex: turning point
(highest OR lowest point)
(0, 0)

Line of Symmetry:
divides a shape or graph in half
Always $x = \#$
(vertical line)

Minimum or Maximum

$$x = 0$$

Concavity: UP
how does it open?

X - Intercepts
Solutions
Roots
Zeros

$$(-3, 0)$$

$$x = -3$$

X - Intercepts
Solutions
Roots
Zeros

$$(1, 0)$$

$$x = 1$$

Axis or Line
of Symmetry

$$x = -1$$

Vertex: (-1, -4)
Minimum or Maximum
Concave Up or Down

Line of Symmetry page 2

Standard form: $y = \underline{ax^2} + \underline{bx} + \underline{c}$

Line of Symmetry Exploration

Graph			
Vertex	$(-2, 2)$	$(2, 4)$	$(1, -4)$
Line of Symmetry	$x = -2$	$x = 2$	$x = 1$
Function	$y = -2x^2 - 8x - 6$ $a = -2$ $b = -8$ $c = -6$	$y = -1x^2 + 4x$ $a = -1$ $b = 4$ $c = 0$	$y = x^2 - 2x - 3$ $a = 1$ $b = -2$ $c = -3$
a	-2	-1	1
b	-8	4	-2
$-\frac{b}{2a}$	$\frac{-(-8)}{2(-2)} = \frac{8}{-4} = -2$	$\frac{-4}{2(-1)} = \frac{-4}{-2} = 2$	$\frac{-(-2)}{2(1)} = \frac{2}{2} = 1$

Line of Symmetry: $x = \frac{-b}{2a}$

Find the Axis of Symmetry for each of the following parabolas

1. $y = 2x^2 + 12x - 7$

$a = 2$ $b = 12$ $c = -7$

$x = \frac{-12}{2(2)} = \boxed{x = -3}$

2. $y = x^2 - 7$

$a = 1$ $b = 0$ $c = -7$

$x = \frac{-0}{2(1)} = \boxed{x = 0}$

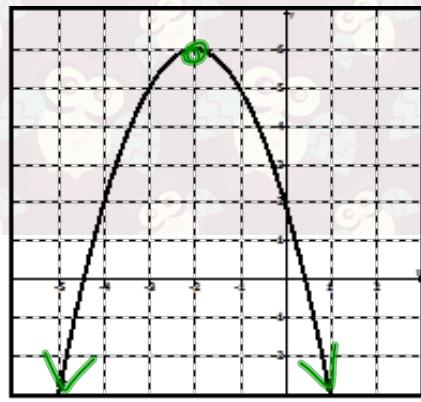
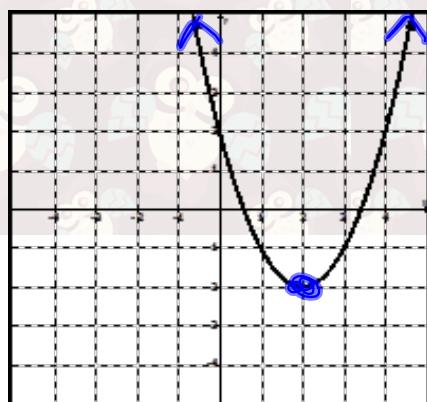
Write the following quadratic equation in standard form: $3x^2 = -5x + 4$

everything to be on same side. $\boxed{0 = -3x^2 - 5x + 4}$

Vertex of a Parabola page 2

$$y = x^2 - 4x + 2$$

$$y = -x^2 - 4x + 2$$



Vertex: $(2, -2)$

Line of Symmetry: $x=2$

Minimum or Maximum

Concavity: UP

Domain: \mathbb{R}

Range: $y \geq -2$

Vertex: $(-2, 6)$

Line of Symmetry: $x = -2$

Minimum or Maximum

Concavity: DOWN

Domain: \mathbb{R}

Range: $y \leq 6$

Algebra I - Unit 9; Topic 1 – Introduction to Quadratic Functions

Practice – Introduction to Quadratic Functions

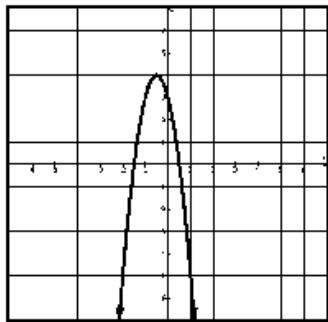
Name _____ Date _____ Period _____

2 pager

pp 590-605

State the domain and range of each quadratic function graphed below.

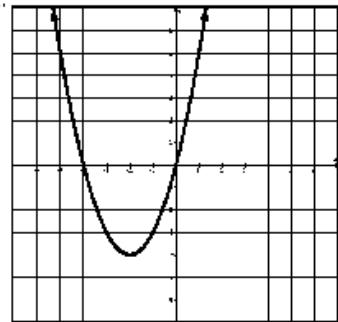
1.



Domain: _____

Range: _____

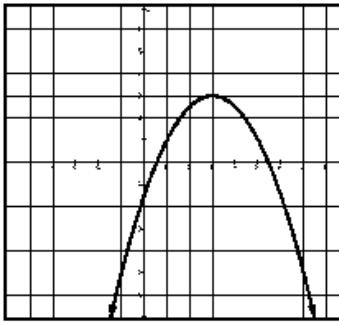
2.



Domain: _____

Range: _____

3.

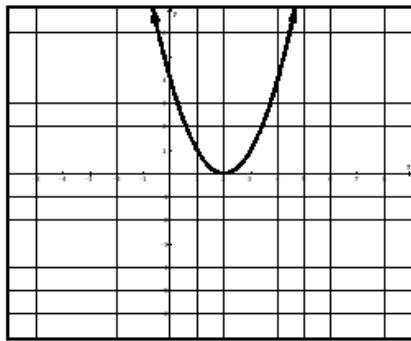


Domain: _____

Range: _____

Find the information using the graphs below.

4. $y = x^2 - 4x + 4$



$a = \underline{\hspace{2cm}}, b = \underline{\hspace{2cm}}, c = \underline{\hspace{2cm}}$

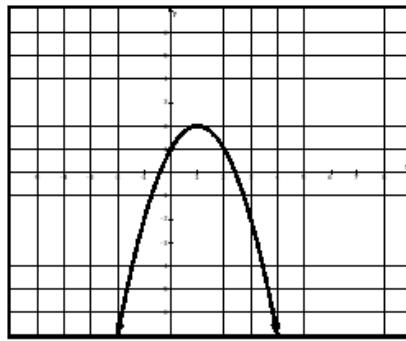
Vertex: _____

Line of Symmetry: _____

Minimum or Maximum

Concavity: _____

5. $y = -x^2 + 2x + 1$



$a = \underline{\hspace{2cm}}, b = \underline{\hspace{2cm}}$

Vertex: _____

Axes of Symmetry: _____

Minimum or Maximum

Concavity: _____

6. Write the following quadratic equation in standard form. $y = 6 - 3x - 5x^2$

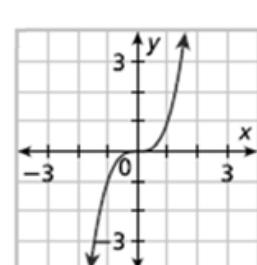
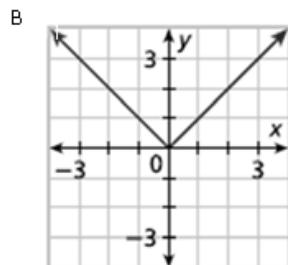
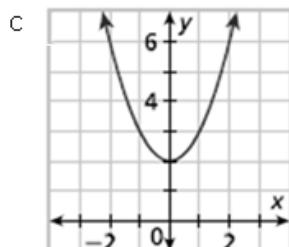
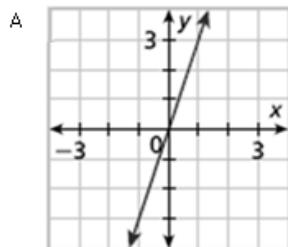
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Algebra I - Unit 9; Topic 1 – Introduction to Quadratic Functions

Find the line of symmetry of each of the following parabolas, show work.

7. $y = x^2 + 3x + 4$

8. $2x^2 - 8x = -3 - y$

9. Which of the following has a parent function of $y = x^2$.10. Which of the following functions has a graph with an axis of symmetry of $x = -\frac{1}{2}$?

- A $y = 2x^2 - 2x + 5$
- B $2x + 5 = 2x^2 - y$
- C $2x^2 + y = 2x + 5$
- D $2x - y = 5 - 2x^2$

11. Which of the following represents the parent function of $y = -3x + 5 - 5x^2$?

- A $y = x$
- B $y = -2x$
- C $y = |x|$
- D $y = x^2$

