Quadratics Day 2

Agenda

Warm-Up
HW Check
Notes (Quadratics Book)
HW (practice #1-9)

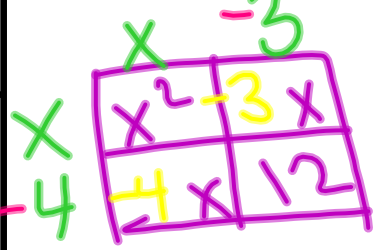
Reminders

- Quiz Friday!
- Progress Report 4
  5.4 due Friday
- EOC Simulation
  Tuesday 3/31

Warm-Up Tuesday

HAVE OUT CALCULATOR!!

1. Factor: $x^2 - 7x + 12$



1 | 12
2 | 6
-3 | -4 = -7

$(x-3)(x-4)$

2. If $y = -4x^2 + 6$ and $x = 2$,

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

then the value of y is -10.

Questions, Comments, Concerns?

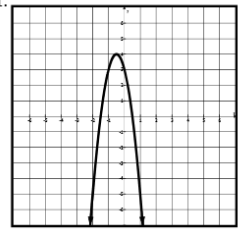
Algebra I - Unit 9: Topic 1 – Introduction to Quadratic Functions

Practice – Introduction to Quadratic Functions **pp 590-605**

Name _____ Date _____ Period _____

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

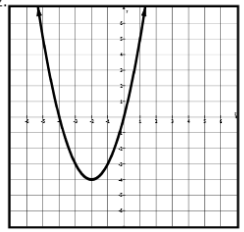
1.



Domain: _____

Range: _____

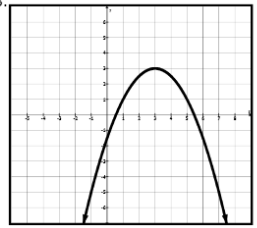
2.



Domain: _____

Range: _____

3.

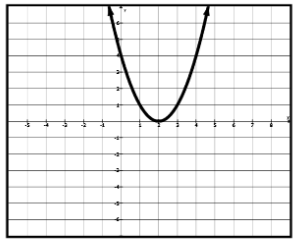


Domain: _____

Range: _____

Find the information using the graphs below.

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



a = _____, b = _____, c = _____

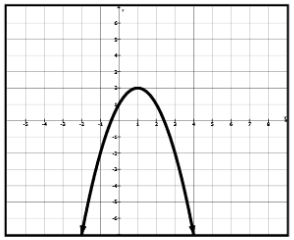
Vertex: _____

Line of Symmetry: _____

Minimum or Maximum

Concavity: _____

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



a = _____, b = _____

Vertex: _____

Axes of Symmetry: _____

Minimum or Maximum

Concavity: _____

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

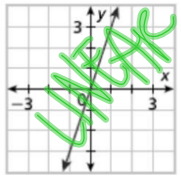
Find the line of symmetry of each of the following parabolas, show work.

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

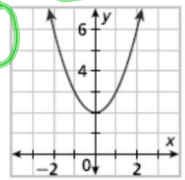
7. $2x^2 - 8x = -3 + y$

8. Which of the following has a parent function of $y = x^2$.

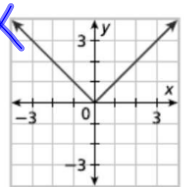
A



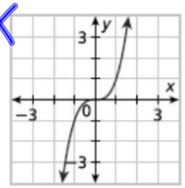
C



B



D



9. 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 $2x - y = 5 - 2x^2$

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

A $y = x$

B $y = -2x$

C $y = |x|$

D $y = x^2$

Quadratics Day 2 page 3

Graphing Quadratic Functions

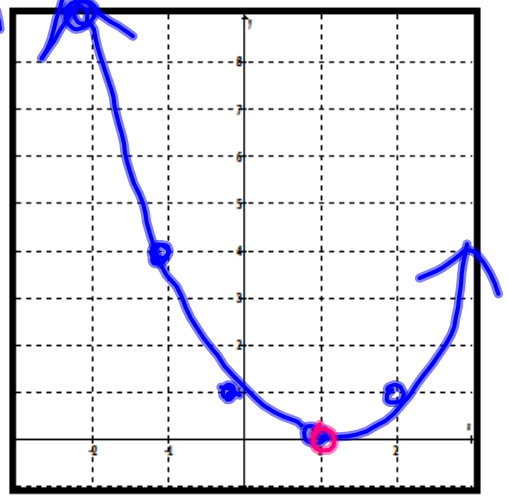
GRAPHING (y=) calculator

plot ≥3 pts connect smooth curve

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

2nd GRAPH

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



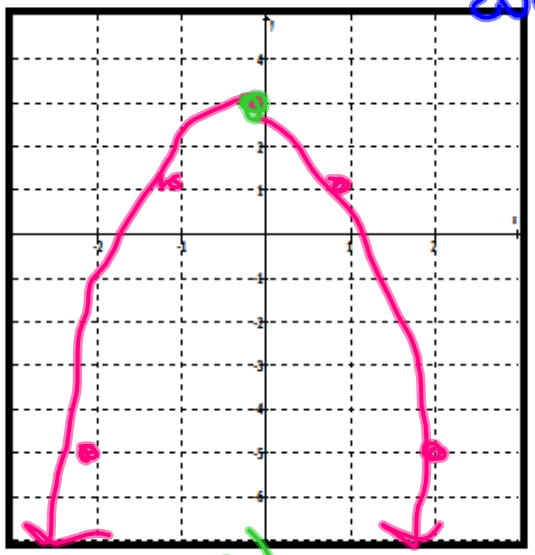
Vertex: (1, 0)

Line of Symmetry: x = 1

Domain: R

Range: y ≥ 0

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



Vertex: (0, 3)

Line of Symmetry: x = 0

Domain: R

Range: y ≤ 3

Quadratics Day 2 page 3

Finding the coordinates of the vertex using a calculator

Steps:

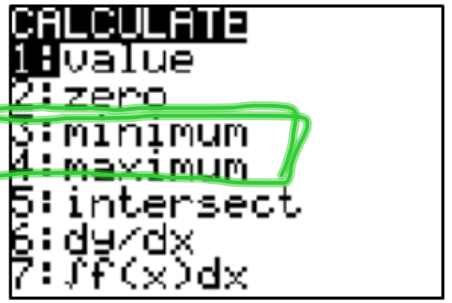
1. Enter equation into y=
2. Press GRAPH
   Is it a minimum or maximum?
3. Press 2nd TRACE
4. Choose 3:minimum or 4:maximum
5. Follow the instructions
   - Scroll to the vertex
   - Go a little to the left, ENTER
   - Go a little to the right, ENTER
   - Back to your vertex, ENTER

1. $y = (x-3)^2 + 2$

Minimum or Maximum

Vertex: (3, 2)

Line of Symmetry: x = 3



2. $y = x^2 + 6x + 4$

Minimum or Maximum

Vertex: (-3, -5)

Line of Symmetry: x = -3

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

Minimum or Maximum

Vertex: (-2, 3)

Line of Symmetry: x = -2

Quadratics Day 2 page 4

Multiple Representations

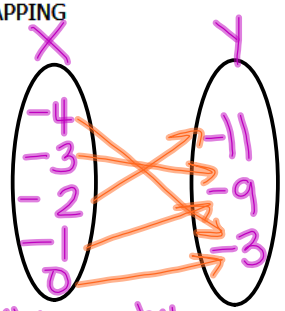
1. $y = 2x^2 + 8x - 3$

CALC. 2nd GRAPH

TABLE

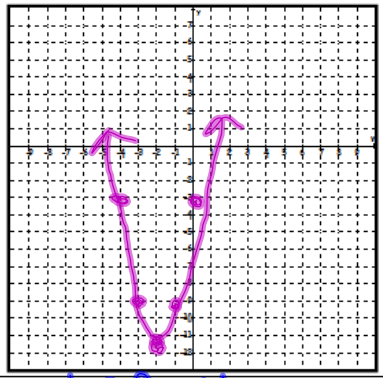
x	y
-4	-3
-3	-9
-2	-11
-1	-9
0	-3

MAPPING



least to greatest, no repeats

GRAPH



Domain

$\mathbb{R}$

Range

$y \geq -11$

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

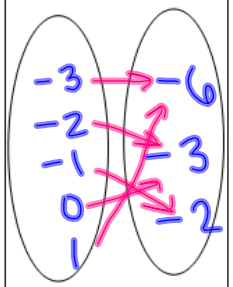
solve for y

$-x^2 \Rightarrow y = -x^2 - 2x - 3$

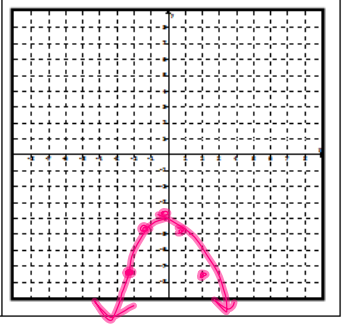
TABLE

x	y
-3	-6
-2	-3
-1	-2
0	-3
1	-6

MAPPING



GRAPH



HW #1-9

You must bring your graphing calculator tomorrow!!!

Al[illegible]9: Topic 1 [illegible]tion t[illegible]tic Func[illegible]ns Day 2

Pr[illegible]ce – [illegible]roduction [illegible]Qu[illegible]ratic F[illegible]ctions Day 2 **pp 590-611**

Name _____ D[illegible] _____ Period _____

Graph the following parabolas.

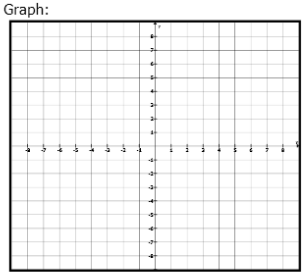
1. $f(x) = x^2 - 2x - 3$

Line of Symmetry: _____
Vertex: _____

Two Values:

x	y

Graph:



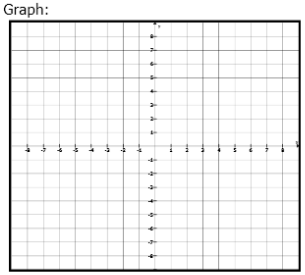
2. $y = -(x-3)^2$

Line of Symmetry: _____
Vertex: _____

Two Values:

x	y

Graph:



Find the vertex of the following quadratics.

3. $y = 5x^2 - 10x + 3$

4. $y = 3x^2 - 1$

5. $y + 7 = 4x - x^2$

6. For the graph of $f(x) = 4x^2 - 8x + 4$, what is the x-coordinate of its vertex?

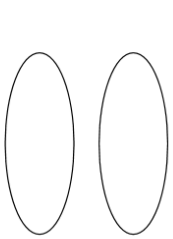
Algebra I - Unit 9: Topic 1 – Introduction to Quadratic Functions Day 2

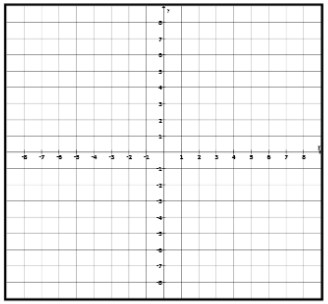
Show all of the indicated representations of the function below.

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

TABLE	MAPPING	GRAPH

x	y
-2	
-1	
0	
1	
2	





8. Which of the following quadratic functions has a maximum?

A $2x^2 - y = 3x - 2$

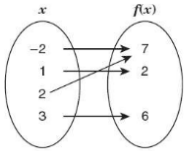
B $y = x^2 + 4x + 16$

C $y - x^2 + 6 = 9x$

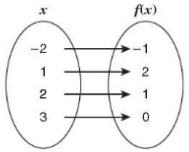
D $y + 3x^2 = 9$

9. Which of the following mappings best represents the function $f(x) = -x^2 + 3$?

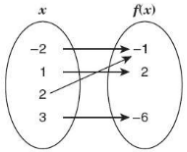
F



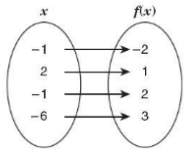
H



G



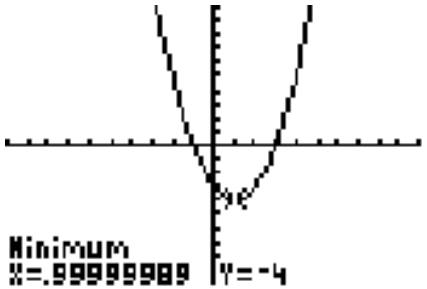
J



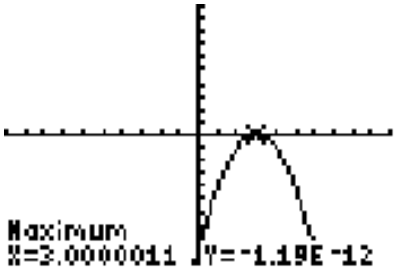
HW help: Quadratics Day 2

1 & 2. Make sure you plot at least 3 points.

1.



2.



Need to borrow a calculator or need extra help? Come to tutorials!

#3-6. Use your calculator. Remember to look at the graph before using your TRACE menu. Make sure each equation is solved for y= before beginning!

Steps:

1. Enter equation into
2. Press GRAPH
   Is it a minimum or maximum?
3. Press 2nd TRACE
4. Choose 3:minimum or 4:maximum
5. Follow the instructions
   - Scroll to the vertex
   - Go a little to the left, ENTER
   - Go a little to the right, ENTER
   - Back to your vertex, ENTER

#7. When mapping, x's go in the first oval and y's go in the second oval. Don't list repeats and make sure your arrows point to the corresponding value!

#8. Solve each equation for y=. Which graph opens DOWN?

#9. Look at the table and make sure the appropriate x value matches with the correct y value.