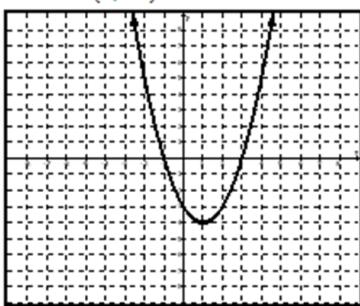


## Quadratics Day 3

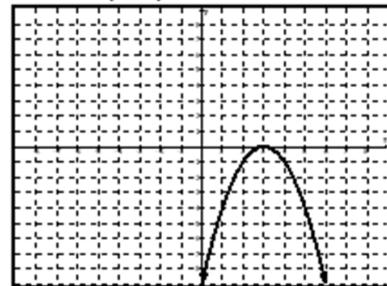
<p><b>Agenda</b></p> <p>Warm-Up</p> <p>HW Check/ Turn-in</p> <p>Notes (finish book)</p> <p>HW: Practice BOTH SIDES</p> <p>We will spin the wheel on Monday...</p> <p><b>Due today:</b> Progress Report &amp; HW 5.4</p> <p><b>Reminders</b></p> <p>Quiz Wednesday</p> <p>EOC Simulation 4/2</p>	<p><b>Warm-Up (Friday)</b></p> <p>1. Evaluate <math>f(3)</math> for <math>f(x) = \frac{3}{x^2} + 4x - 3</math></p> $f(3) = (3)^2 + 4(3) - 3$ $= 9 + 12 - 3$ <p style="text-align: right;"><math>\boxed{18}</math></p> <p>2. Find the area, in simplest terms, of the shaded region.</p> <p>A. <math>5x^2 - 12x</math></p> <p>B. <math>5x^2 - 6x</math></p> <p>C. <math>6x^2 - 6x</math></p> <p>D. <math>6x^2 - 12x</math></p> <p style="text-align: right;"><math>A_{\text{big}} - A_{\text{small}}</math></p> <p><math display="block">\text{Area} = (3x)(x+3) - (2x-3)x</math> <math display="block">= 3x^2 + 9x - 2x^2 + 3x</math> <math display="block">= x^2 + 12x</math></p>
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2A) Check

1. Line of Symmetry:  $x = 1$   
Vertex:  $(1, -4)$



2. Line of Symmetry:  $x = 3$   
Vertex:  $(3, 0)$



3.  $(1, -2)$   
4.  $(0, -1)$   
5.  $(2, -3)$   
6.  $x = 1$

7.

TABLE		MAPPING	GRAPH
$x$	$y$	$\begin{array}{ccc} x & \rightarrow & y \\ -2 & \nearrow & 8 \\ -1 & \nearrow & 5 \\ 0 & \nearrow & 4 \\ 1 & \nearrow & 5 \\ 2 & \nearrow & 8 \end{array}$	
VERBAL	$y$ is a real number that is four more than the square of $x$ .		

8. D  
9. G

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

## Practice – Introduction to Quadratic Functions Day 2

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

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**Graph the following parabolas.**

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

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

Line of Symmetry: \_\_\_\_\_  
Vertex: \_\_\_\_\_Line of Symmetry: \_\_\_\_\_  
Vertex: \_\_\_\_\_

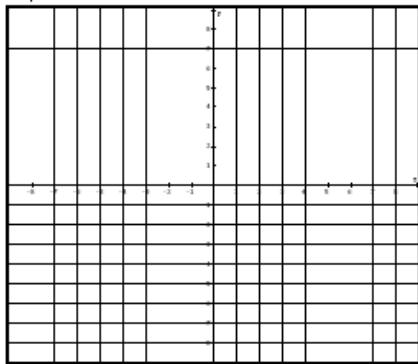
Two Values:

x	y

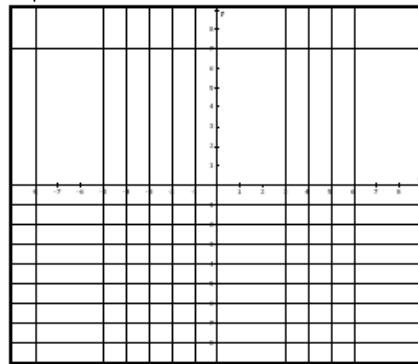
Two Values:

x	y

Graph:



Graph:

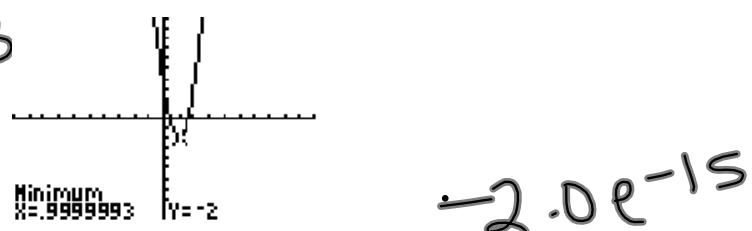
**Find the vertex of the following quadratics.**

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

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

$$(1, -2)$$

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



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

$$-2.0 \text{ e}^{-15}$$

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												
<table border="1"> <thead> <tr> <th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-2</td><td></td></tr> <tr><td>-1</td><td></td></tr> <tr><td>0</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> </tbody> </table>	x	y	-2		-1		0		1		2			
x	y													
-2														
-1														
0														
1														
2														
VERBAL														

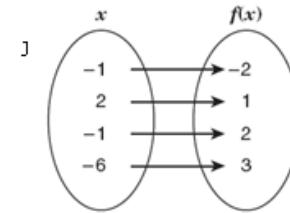
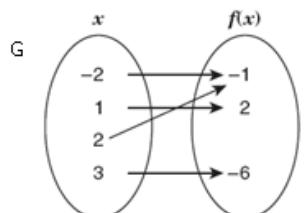
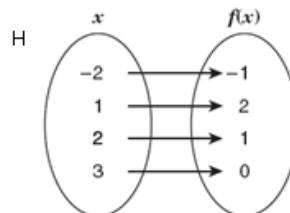
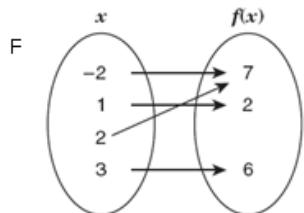
8. Which of the following quadratic functions has a maximum?

Solve for y

A  $2x^2 - y = 3x - 2$   
 B  $y = x^2 + 4x + 16$   
 C  $y = x^2 + 6 = 9x$   
 D  $y + 3x^2 = 9$

$y = x^2 + 9x - 6$   
 $y = -3x^2 + 9$

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

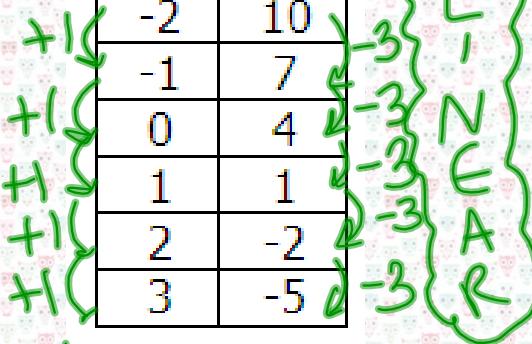


## Quadratics Day 3 page 5

### Linear vs. Quadratic

1.

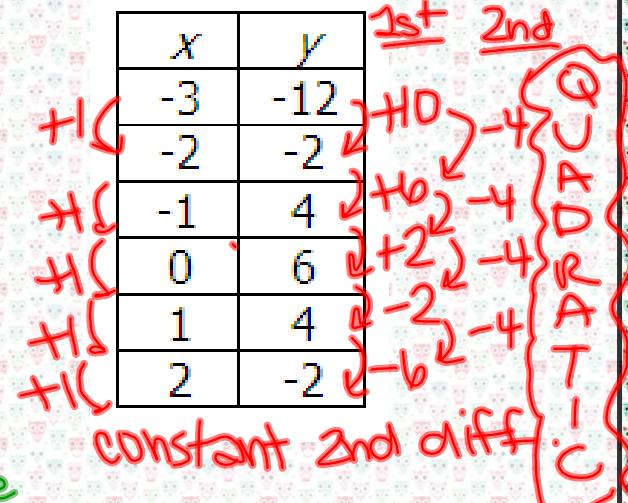
$x$	$y$
-2	10
-1	7
0	4
1	1
2	-2
3	-5



- Plot points → shape  
- look @ table (differences)

2.

$x$	$y$
-3	-12
-2	-2
-1	4
0	6
1	4
2	-2



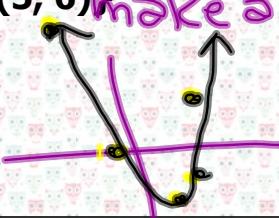
has slope  
constant first difference

make a table

3.  $\{(-3, 14), (-1, 0), (2, -6), (3, -4), (5, 6)\}$

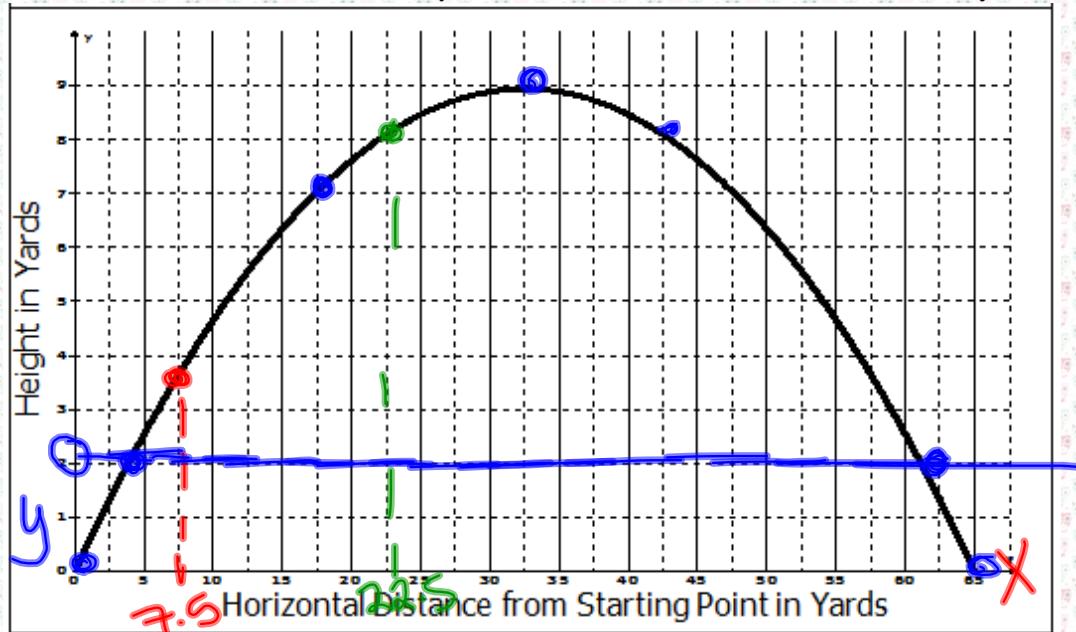
PLOT POINTS  
(STAT plot)

QUADRATIC



## Quadratics Day 3 page 6

The graph below represents the relationship between the height (in yards) and the horizontal distance (in yards) of a soccer ball after being kicked.



Find the following values:

$$f(x) = y$$

$$f(7.5) = \text{find } y\text{-value when } x=7.5 \quad \approx 3.5 \text{ yards}$$

$$f(22.5) = 8 \text{ yards}$$

When  $f(x) = 2$ , find the value of  $x$ .

$$y=2$$

$\approx 4 \text{ yards}$   
 $\approx 62 \text{ yards}$

pretty points

$x$	$y$
0	0
7.5	3.5
22.5	8
32.5	9
65	0

Round to hundredths

$$y = -0.01x^2 + 0.55x - 0.02$$

## Quadratics Day 3 page 7 (back)

### Evaluating Quadratic Functions

LABEL, plug in values

dependent -  $y$   
independent -  $x$

Given the quadratic function  $f(x) = 3x^2 + 2x - 5$  find the dependent variables when the independent variables are  $\{-3, 0, 1, 5\}$

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

2nd GRAPH

$$\left\{ \begin{array}{l} 16 \\ -5 \\ 0 \\ 80 \end{array} \right\}$$

Given the quadratic function  $f(x) = -5x^2 + 2x + 6$  find the dependent variables when the independent variables are  $\{-31, -9, 5, 22\}$ .

2nd WINDOW

Tbl Start =

Given the quadratic equation  $f(x) = 2x^2 - 3x + 1$ , find

$$f(-32)$$

$$f(1)$$

$$f(3)$$

$$f(44)$$

**DUE MONDAY, WE WILL SPIN THE WHEEL**

Answers will be posted at <http://www.mskmathrhs.weebly.com>

Algebra I - Unit 9: Topic 1 – Introduction to Quadratic Functions Day 3

Practice – Introduction to Quadratic Functions Day 3

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Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Tell whether each function is linear, quadratic, or neither.

1.  $3x^2 - x - y = 11$

2.

<b>x</b>	-2	-1	0	1	2
<b>y</b>	-4	0	4	8	12

3.  $\{(-10, 15), (-9, 17), (-8, 19), (-7, 21), (-6, 23)\}$       4.  $y = -3x + 20$

5.

<b>x</b>	<b>y</b>
-4	8
-2	2
0	0
2	2
4	8

6. A function is described by the equation  $f(x) = x^2 - 3$ . The replacement set for the independent variable is  $\{-4, -1, 2, 4\}$ . Which of the following is contained in the corresponding set for the dependent variable?

- A 6
- B 2
- C -1
- D 13

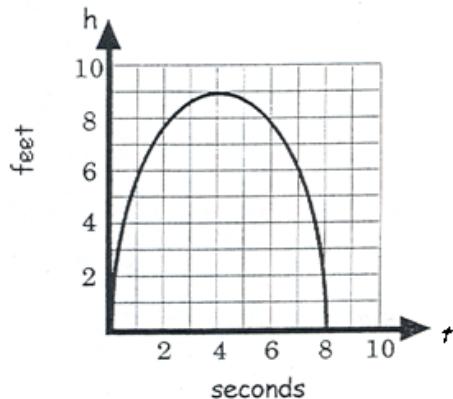
7. Given the function  $f(x) = 3x^2 - 5$ , what is the value of  $f(-2)$ ?

8. A quadratic function is given below. What is  $f(4)$ ?

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

## Algebra I - Unit 9; Topic 1 – Introduction to Quadratic Functions Day 3

9. Mark punted a football. The graph below represents the height,  $h$ , of the football at time,  $t$ .



- A. Find  $f(1)$ . \_\_\_\_\_
- B. Find  $f(7)$ . \_\_\_\_\_
- C. After how many seconds was the ball at its maximum height? \_\_\_\_\_
- D. What was the maximum height of the ball? \_\_\_\_\_
- E. Fill in the table with four points that lie on the graph.

$x$				
$y$				

- F. Calculate the quadratic equation. \_\_\_\_\_  
(Round each part of the equation to the nearest tenth.)

10. Calculate the curve of best fit represented by the data in the table below.  
(Round each part of the equation to the nearest tenth.)

$x$	$y$
-8	-370
-3	-66
-1	-18
4	79
6	-175

quad  
reg

