Bell Work:

1.) Write the equation, and graph the line through (3, 10) and (0, 1)

2.) Write the equation, and graph the line through (-6, 1) and (5, 2)

Find the slope, y-intercept, domain and range.

From Last Time…

New Material

Page 86 #1, 11, 17, 19, 27, 32

Mixed Review

Page 88 #60, 62, 66, 67

ALGEBRA 3

Day 18

Quiz 1: Level 2

1.) Given (5,2) (-7,10) (3,10) (0,5) (3, -6) (1, 3/5)

Is it a relation? _____ *Is it a function?* _____

State Domain: _____ *State Range:* _____

2.) *Write the equation, given that the slope is* $-\frac{2}{3}$ *and the* $y-$ *intercept is* (0,5)

3.) *Write the equation of the line through* $(-2,4)$ *and* $(0,-8)$

Quiz 1: Level 3

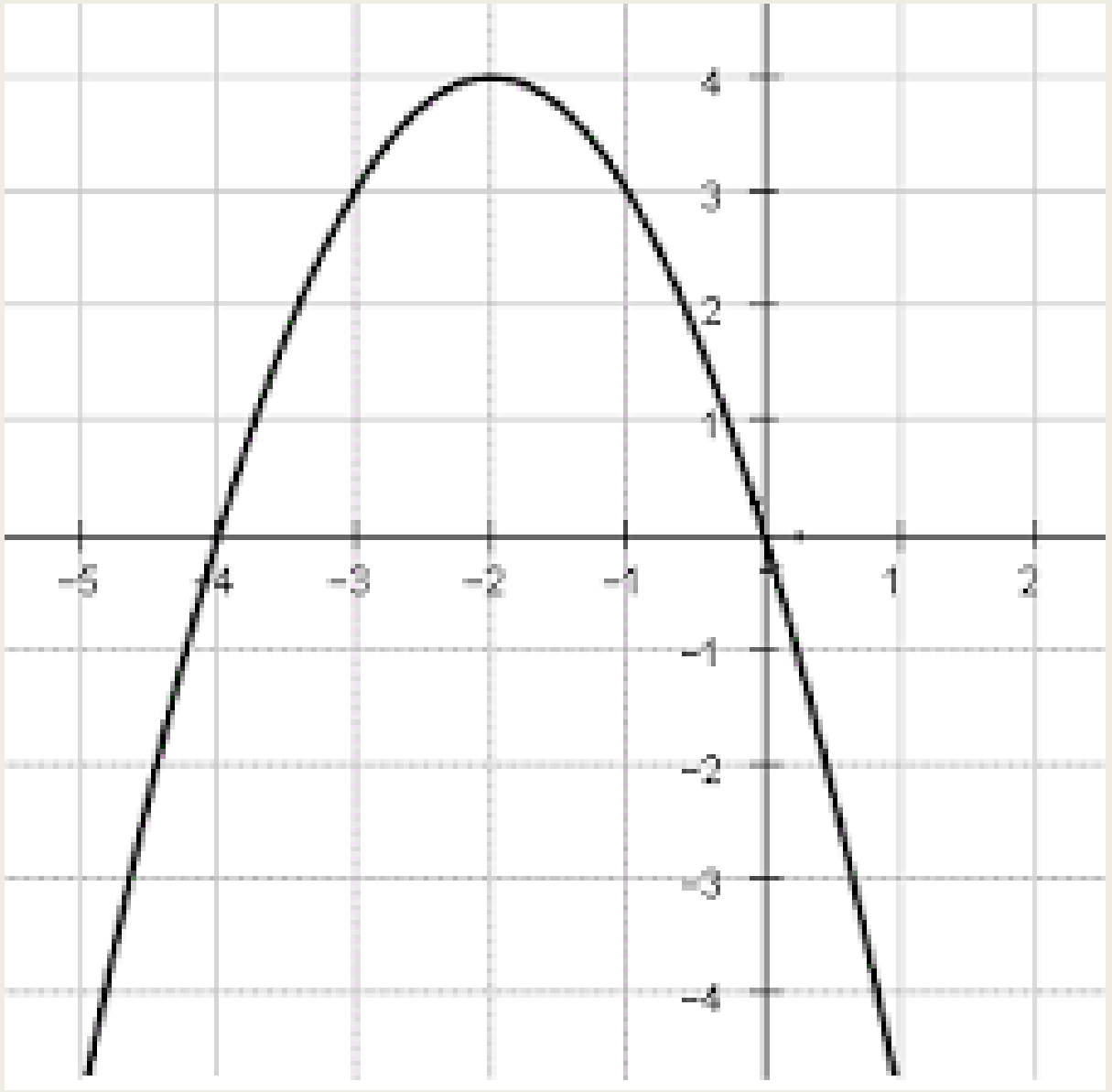
3.) $Write\ the\ equation\ of\ the\ line\ through\ the\ points\ (2, 12)\ and\ (-2, 0)$

4.) Graph $2x + 5y = 20$

Quiz 1: Level 4

5.) Given the graph at right… describe the Domain and Range.

What could you do to the graph for it to NOT be a function anymore?



Chapter 2 Section 5
Using Linear Equations

Objective: Identify correlation and write equation of best fit

Chapter 2 Section 6
Families of Functions

Objective: Describe the transformation from the parent graph

Chapter 2 Section 5
Using Linear Equations Vocabulary

- **Scatter Plot** – graph used to determine if a relationship exists between paired data

- **Positive Correlation**—y increases as x increases

- **Negative Correlation**—y decreases as x increases

- **Relatively No Correlation**—no linear pattern

Write the Equation of a Line of Best Fit

Steps to Writing Equation of Best Fitting Lines

-- Draw Scatter Plot

-- Sketch line that appears to follow the pattern (equal dots above and below)

-- Choose two points on the line and estimate coordinates (don't have to be original)

-- Find an equation of that line (*trend line*)

-- Find the slope: $m = \frac{y2-y1}{x2-x1}$

-- Use point slope: $y - y1 = m\,(x - x1)$

Examples: Describe the correlation and write the equation of the line of best fit for the given data

Below is a table that shows the age of a driver, and the average speed at which they drive.

Age:	16	16	18	18	25	20	28	30	40	60
Speed:	45	48	52	49	42	45	40	38	30	22

Chapter 2 Section 6
Family of Functions Vocabulary

- **Parent Graph** – graph simplest form in a set of functions that form a “family”

- **Transformation**—each function in the “family” that is related to the parent

- **Translation**—type of transformation that shifts parent graph horizontally, vertically, or both without changing the shape of the parent graph

Types of Transformations

- $f(x)\ is\ the\ parent\ graph$
- $f(x \pm h) is\ a\ horizontal\ shift$
- $f(x) \pm k\ is\ a\ vertical\ shift$

- When you reflect a graph over the y-axis the x-values change signs and the y-values stay the same.
$$f(x) \rightarrow f(-x)$$
- When you reflect a graph over the x-axis the y-values change signs and the x-values stay the same
$f(x) \rightarrow\ -f(x)$

Example (Using Graphing Calculator): Describe the transformation.

Parent Graph $f(x) = x^2$

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

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

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

4.) $f(x) = -5(x - 1)^2 + 6$

For Next Time…

New Material (Section 2.5)

Page 96 #1, 7, 9, 13, 15-17, 27

New Material (Section 2.6)

Page 103 #5, 6, 13, 19-21, 55