Linear Parent Function

Agenda

Warm-Up
(Card Sort)

Notes p.42

HW: Practice #1-8

Reminders

HW 2.4 Due Friday

TEST Tues 11/3

Test Corrections TBA

Essential Question:

How do I identify linear functions from a graph or an equation?

Warm-Up Monday

With your table, try to sort the cards into three groups. Once you have sorted, <u>write down what you would name your groups</u> on the Monday box and answer the following questions:

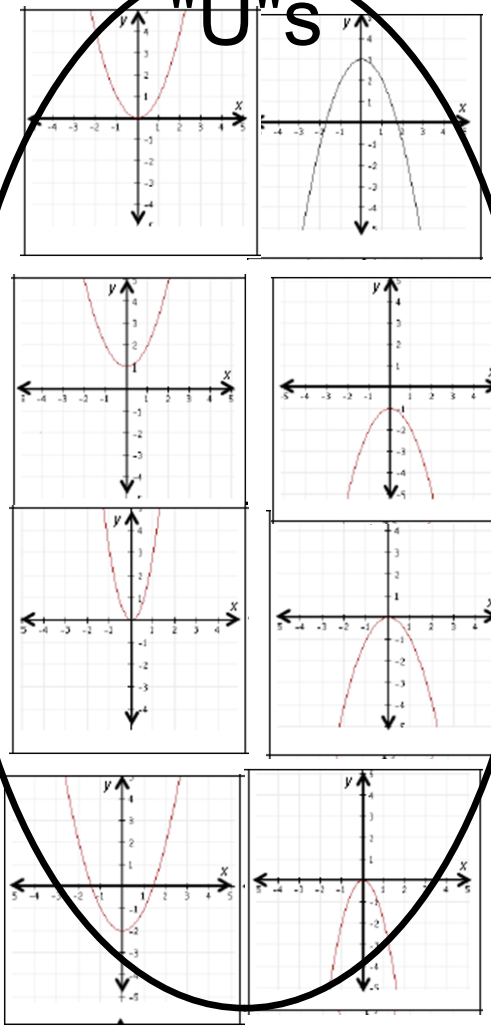
1. What do the graphs have in common?

2. What is different about your groups?

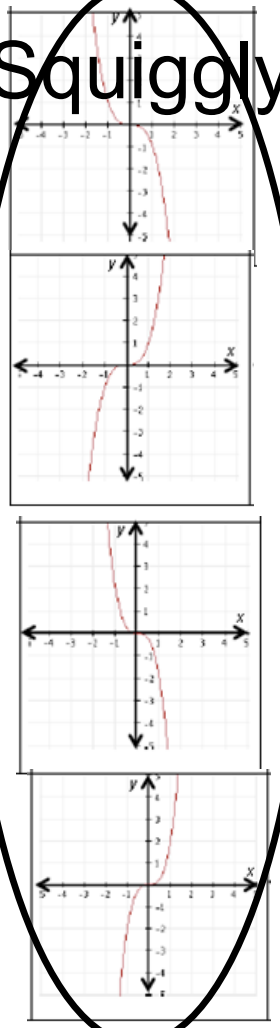
Linear Parent Function

How did you sort the graphs?

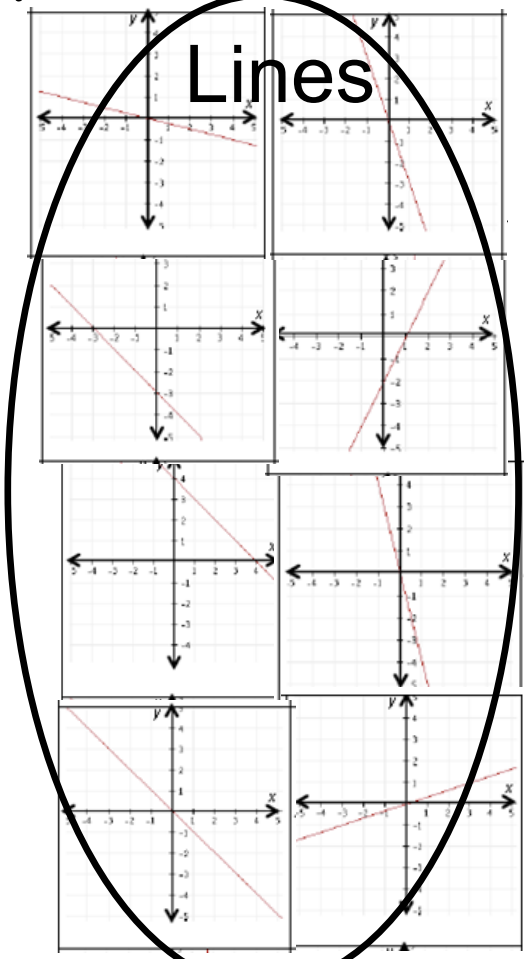
"U"s



Squiggly



Lines



Linear Parent Function

Now...how would you sort these equations?

HINT: you can always use your calculator!

Squiggles

$y = -x^3$

$y = x^3$

$y = -2x^3$

$y = 2x^3$

Linear

$y = -x - 3$

$y = -x$

$y = -\frac{1}{4}x$

$y = -3x$

"U"s

$y = x^2 + 1$

$y = x^2 - 2$

$y = x^2$

$y = 3x^2$

Linear Parent Function p.42

Essential Question: How do I identify linear functions from a graph or an equation?

Student Notes – Linear Parent Function

These functions are part of a family of functions. They are transformations of the most basic function in this family of functions, linear parent function. It can be written as y = x.

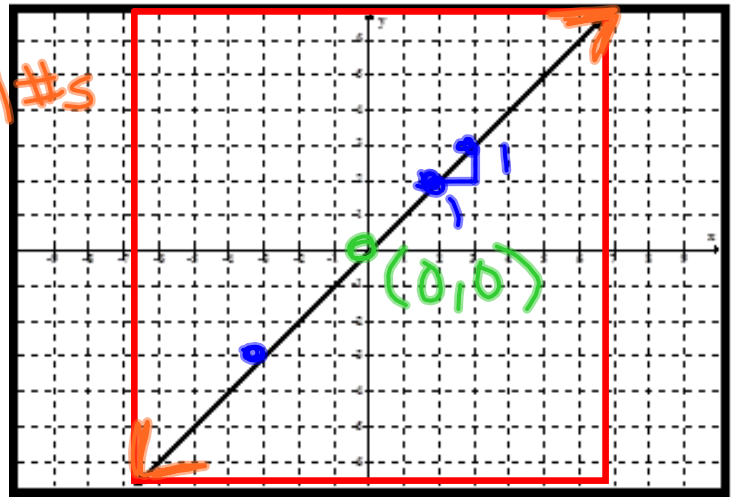
$y = 1x + 0$

The linear parent function is graphed below. Use the graph to find the following information:

1. Determine the domain and range of this parent function. D, L, R ROBOT

Domain: $-\infty < x < \infty$, All Real #s $\mathbb{R}$

Range: $-\infty < y < \infty$



2. What do you notice about the slope of the parent function?

$m = \frac{\text{RISE}}{\text{RUN}} = \frac{1}{1} = 1$

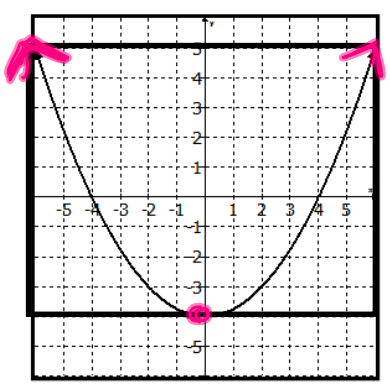
3. What do you notice about the *y*-intercept of the parent function? passes through the origin (0,0)

Linear Parent Function p.42

Essential Question: *How do I identify linear functions from a graph or an equation?*

Determine whether the following functions are linear ~~are~~ or not and explain your reasoning, then find the domain and range for each function.

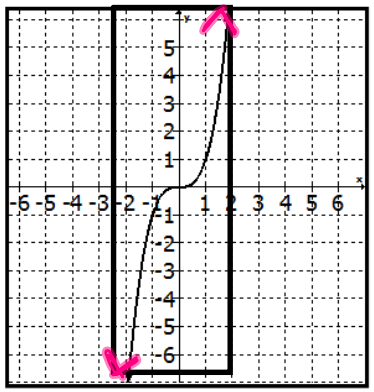
4.



Linear or Not?	NOT.
Domain	$-\infty < x < \infty$
Range	$\boxed{-4 \le y \le \infty}$

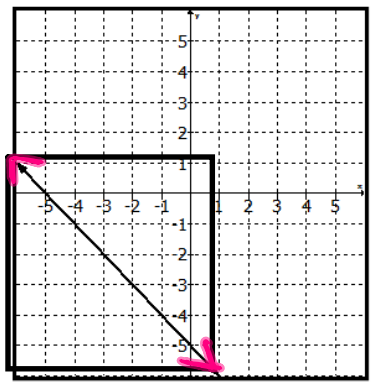
$y \ge -4$

5.



Linear or Not?	NOT
Domain	$\mathbb{R}$
Range	$\mathbb{R}$

6.



Linear or Not?	Linear
Domain	All Real #s
Range	All Real #s

$\forall x \in \mathbb{R}$

$\forall y \in \mathbb{R}$

Linear Parent Function p.42

Essential Question: How do I identify linear functions from a graph or an equation?

7. Determine which of the following functions are linear? Explain your reasoning.

I. $y = \frac{2}{3}x + 14$ ✓

II. $3x + 5x^2 = -3$

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

IV. $2x + 5 + 2x = y$

~~A~~ II and III

~~B~~ IV only

~~C~~ III and IV

D I and IV

Linear → no exponents

#1-8

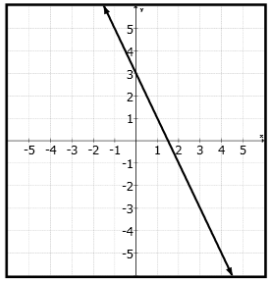
Algebra I - Unit 2: Topic 2 – Domain and Range Using Parent Functions

Practice - Domain and Range Using Parent Functions **No Textbook Correlation**

Name_____ Date _____ Per _____

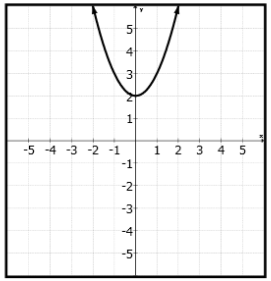
Determine whether the following functions are Linear or Not. State their Domain and Range

1.



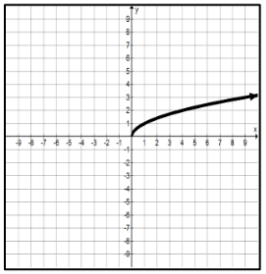
Linear or Not?	
Domain	
Range	

2.



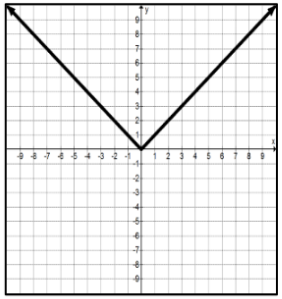
Linear or Not?	
Domain	
Range	

3.



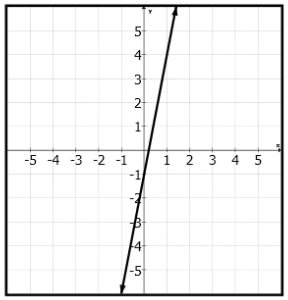
Linear or Not?	
Domain	
Range	

4.



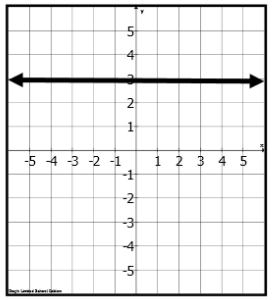
Linear or Not?	
Domain	
Range	

5.



Linear or Not?	
Domain	
Range	

6.



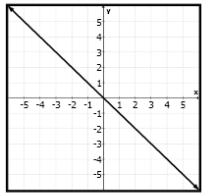
Linear or Not?	
Domain	
Range	

Algebra I - Unit 2: Topic 2 – Domain and Range Using Parent Functions

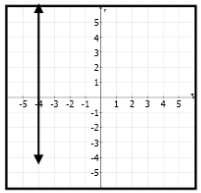
Answer the following.

7. Which graph below best represents the linear parent function?

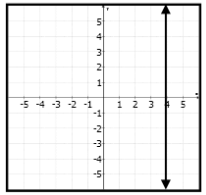
A



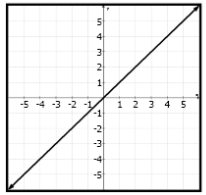
C



B

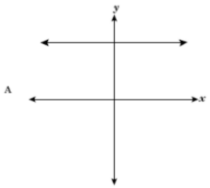


D

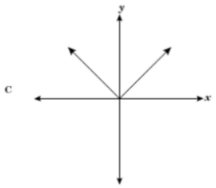


8. Which is the best representation of the function $y=x$?

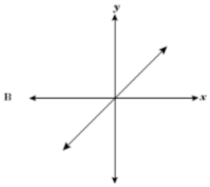
A



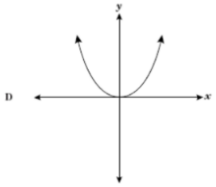
C



B



D



HW Help: Linear Parent Function

- Linear functions look like LINES.
- Their equations have an x (no squared or cubed, etc)
- To find domain & range, try to box the function...remember you can't "box" an arrow!!

1.

Linear or Not?	Linear
Domain	All Real #s
Range	All Real #s

2.

Linear or Not?	Not
Domain	All Real #s
Range	$y \geq 2$

3.

Linear or Not?	Not
Domain	$x \geq 0$
Range	$y \geq 0$

You try #4-6!

Be careful... the linear PARENT function is increasing and goes through the origin!

7. D

8. B