

Transformations: Changing m

Agenda

Warm-Up

HW Check

Notes p.43

HW: Practice #1-8

Reminders

HW 2.4 due Friday!

TEST Tuesday 11/3

Essential

Question

What happens to the line
when I change the "m"
value of an equation?

Warm-Up Tuesday

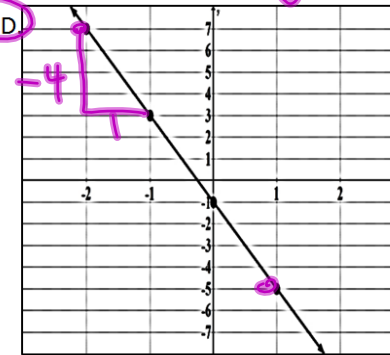
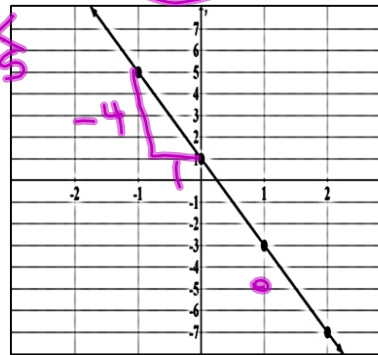
Which describes a line passing through (1, -5) that is perpendicular to the line described by $y = \frac{1}{4}x + 1$?

Flip #, change sign

A. $y = -4x - 5$
 $-5 = -4(1) - 5$
 $-5 = -4 - 5$
 $-5 = -9$

B. $y = \frac{1}{4}x + 3$

$-\frac{4}{1}$



y-int (0, b)

Questions Comments Concerns?

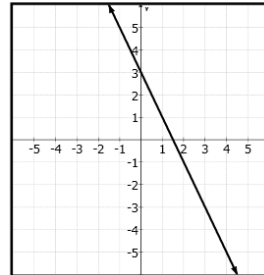
Algebra 1 - Unit 2: Topic 2 - Domain and Range Using Parent Functions

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

Name _____ Date _____ Per _____

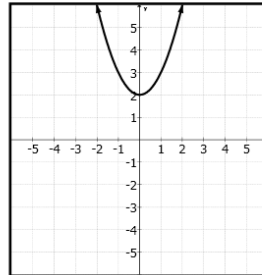
Determine whether the following functions are Linear or Not. State their Domain and Range

1.



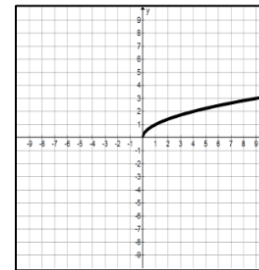
Linear or Not?	
Domain	
Range	

2.



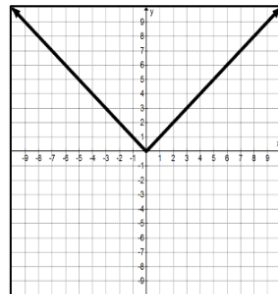
Linear or Not?	
Domain	
Range	

3.



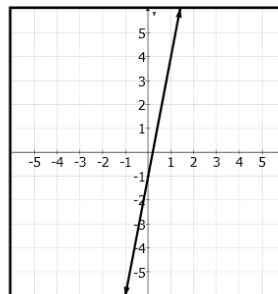
Linear or Not?	
Domain	
Range	

4.



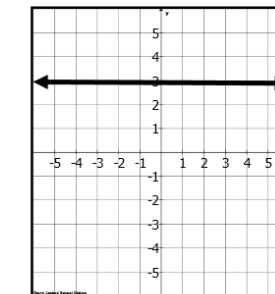
Linear or Not?	
Domain	
Range	

5.



Linear or Not?	
Domain	
Range	

6.



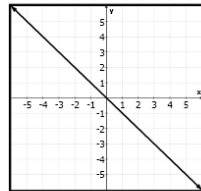
Linear or Not?	
Domain	
Range	

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

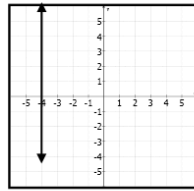
Answer the following.

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

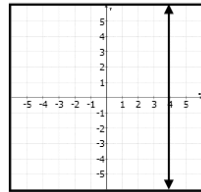
A



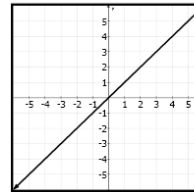
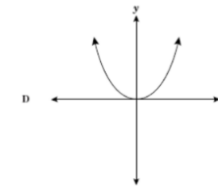
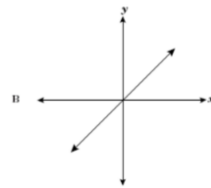
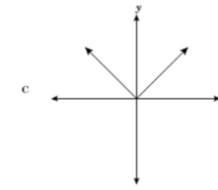
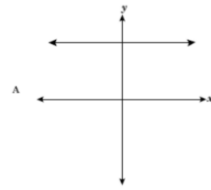
C



B



D

8. Which is the best representation of the function $y=x^2$?

Transformations: Changing m p.43

Essential Question

What happens to the line when I change the "m" value of an equation?

Sketch a graph of the following equations on the same coordinate plane, using a **different color** for each line.

<p>Equations</p> <p>Linear Parent Function</p> <p>1. $y_1 = x$</p> <p>$y_2 = 2x$</p> <p>$y_3 = 4x$</p>	<p>Graph</p>	<p>What is changing?</p> <p>m (slope) is getting bigger</p>	<p>How do the lines compare?</p> <p>got steeper</p> <p>even steeper</p>
<p>$y_1 = x$</p> <p>2. $y_2 = \frac{1}{2}x$</p> <p>$y_3 = \frac{1}{4}x$</p>		<p>m (slope) is getting smaller</p>	<p>• less steep (flatter)</p> <p>• even less steep (more flat)</p>
<p>$y_1 = x$</p> <p>$y_2 = -x$</p> <p>3. $y_3 = 2x$</p> <p>$y_4 = -2x$</p>		<p>m (slope) is negative</p>	<p>• decreasing</p> <p>• flip (reflect)</p>

Transformations: Changing m p.43

Essential Question

What happens to the line when I change the "m" value of an equation?

Sketch a graph of the following equations on the same coordinate plane, using a **different color** for each line.

Equations	Graph	What is changing?	How do the lines compare?
$y_1 = x$ $y_2 = -\frac{1}{2}x$ $y_3 = 3x$ $y_4 = -2x$		<p>② m negative, smaller</p> <p>③ m bigger</p> <p>④ m negative bigger</p>	<p>② reflect flatter</p> <p>③ steeper</p> <p>④ reflect steeper</p>
<p>5. $f(x) = x$</p> <p>$g(x) = 2f(x)$</p> <p>$h(x) = f(-3x)$</p>			

Transformations: Changing m p.43

Essential Question

What happens to the line when I change the "m" value of an equation?

Use this equation for problems 6-9: $f(x) = 2x$

6. How does this compare to the linear parent function ($f(x) = x$)? steeper

7. How would the graph change if the 2 in the equation was changed to a 5? even steeper

8. What if the 2 was changed to a $\frac{1}{2}$? less steep / flatter

9. Predict what would happen if the slope of the function was changed to $-\frac{1}{2}$. reflection!

$$y_1 = x$$

$$y_2 = 2x$$

Transformations: Changing m p.43

Essential
Question

What happens to the line when I change the "m" value of an equation?

Summary:

Slope affects:

steepness (big \rightarrow steep, small \rightarrow flat)

A negative "m" causes:

reflection

Algebra I - Unit 3: Topic 2 – Changes of m Practice – Changes in Slope (m)

Name _____ Date _____ Period _____

- Describe the change of the graph of $y = x$ if the equation changes to $y = \frac{3}{5}x$.
 - The new line is steeper.
 - The new line is less steep.
 - The new line shifts up $\frac{3}{5}$ units.
 - The new shifts down $\frac{3}{5}$ units.
- Describe the change of the graph of $f(x) = x$ if the equation changes to $g(x) = 4x$.
 - The line $g(x)$ is the same.
 - The new line is decreasing and four times as steep.
 - The new line is increasing and four times as steep.
 - The new line is horizontal.
- Without using a calculator, describe the change of the graph of $y = x$ if the equation changes to $y = -\frac{1}{3}x$.
 - The graph is increasing but is flatter.
 - The graph is increasing and steeper.
 - The graph is decreasing and flatter.
 - The graph is decreasing and steeper.
- What would be the equation of the line $g(x)$ if the line $f(x) = x + 4$ becomes flatter by a scale factor of $\frac{1}{2}$?
 - $g(x) = x - \frac{1}{2}$
 - $g(x) = -\frac{1}{2}x + 4$
 - $g(x) = x + \frac{1}{2}$
 - $g(x) = \frac{1}{2}x + 4$
- What would be the equation of the line $g(x)$ if the line $f(x) = x$ becomes three times steeper and is reflected?
 - $g(x) = x + 3$
 - $g(x) = x - 3$
 - $g(x) = -3x$
 - $g(x) = 3x$
- Choose all of the following options that describe the change(s) of the graph of $f(x) = 2x$ if the equation changes to $g(x) = -4x$.
 - The line $g(x)$ is less steep
 - The line $g(x)$ is reflected
 - The line $g(x)$ is steeper
 - The line $g(x)$ is shifted down.
- Given the two linear equations, decide if each statement is TRUE or FALSE.

$$f(x) = \frac{1}{5}x + 3$$

$$g(x) = -5x + 3$$

_____ $f(x)$ and $g(x)$ are parallel.

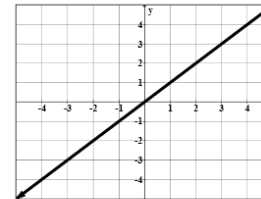
_____ $f(x)$ and $g(x)$ are perpendicular.

_____ $g(x)$ is steeper than $f(x)$.

_____ $f(x)$ is decreasing.

_____ $g(x)$ is decreasing.

8. The graph below represents the parent function $y = x$.



- A) From the equation above, if the slope is changed to -2 , what is the equation of the new line?
- B) Graph the new line on the graph above.
- C) Describe the transformation from the original line to the new line.

HW/ Help: Changes of m

If you put the original graph (usually $y=x$) into y and your new equation into y and make the line bold, you can compare the graphs! Read your answer choices CAREFULLY!

NO WORK = NO CREDIT = NO KIDDING

1. B

6. B & C

2. C

7. Remember: parallel lines have the same slope and perpendicular lines have flippin opposite slopes!

3. C

4. D

8. a) your new equation would be $y = -2x$. Graph it and write how the graph changed!

5. C

