

# Warm-Up

# 1/11/18

1. What is the x-intercept and y-intercept?

y-intercept

y when  $x=0$   
 $(0, 2)$

x-intercept

x when  $y=0$   
 $(-2, 0)$

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

2. Water is draining from a hot water heater:

a. What is the domain?

$[0, 15]$

b. What is the range?

$[0, 60]$

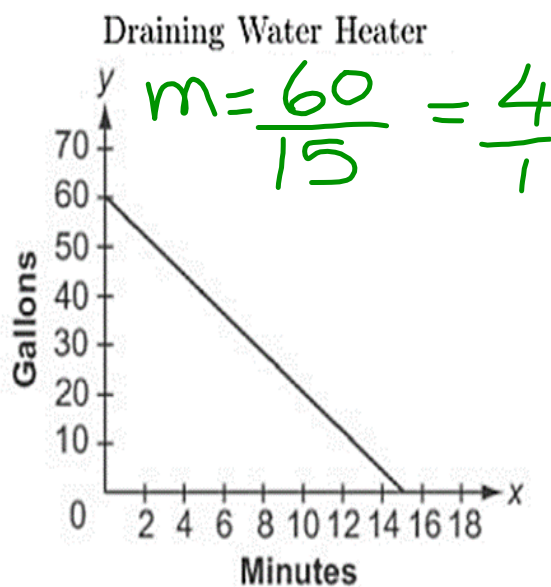
$$m = 4$$

c. What is the slope (simplified and labeled)?

$(15, 0)$   $(0, 60)$

d. What are the x and y intercepts?

Interpret this in terms of the problem scenario.



The slope is  $\frac{4}{1}$ .

4 gallons of water is lost every minute.

The x-intercept:  $(15, 0)$

means that it takes

15 minutes for the water heater to get empty.

The y-intercept:  $(0, 60)$

means, the initial amount of water in the water heater

is 60 gallons.

X	Y	$f(x) = x^1 + 3$ $x^0$
1	4	<div style="border: 1px solid blue; padding: 5px; display: inline-block;">Degree is 1</div>
0	3	
2	5	
-1	4	
3	6	

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

## Comparing Linear Models 1/11/18

1. How do you know the equation is a linear function? **When the degree is 1.**

2. How do you know a table of values is a linear function? **When the rate of change is constant.**

3. How do you know a graph is a linear function? **When the graph is a straight line.**

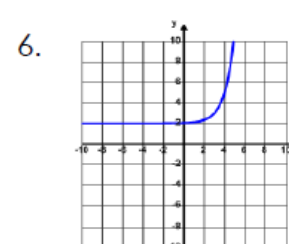
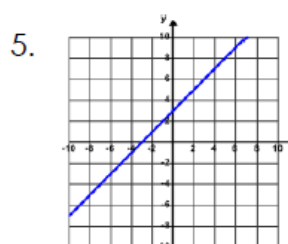
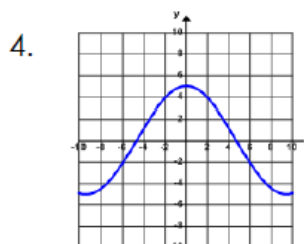
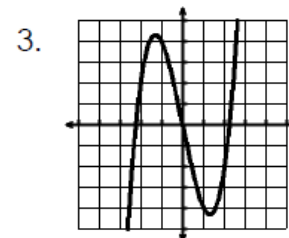
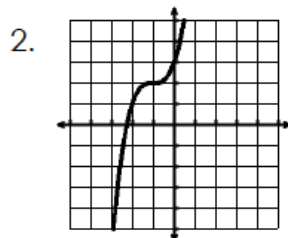
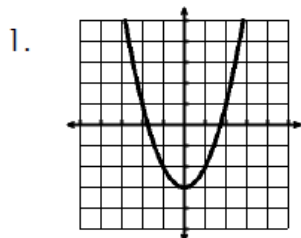
## Agenda for Today 1/11/18

1. Warm-Up ✓
2. HW Review: Odd & Even Functions
3. Characteristics of Linear Functions  
PPT
4. Class Work - Characteristics of  
Functions # 1-4
5. HW #1-5
6. Closing

## HW Review: Odd & Even Functions

### Even and Odd Functions

Tell whether the function is even, odd, or neither.



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

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

9.  $f(x) = x^3 + 4x + 1$

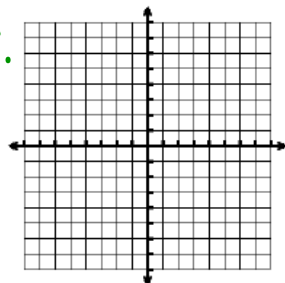
10.  $f(x) = \frac{1}{2}x^4 + 9$

11.  $f(x) = 5x + 1$

12.  $f(x) = 5$

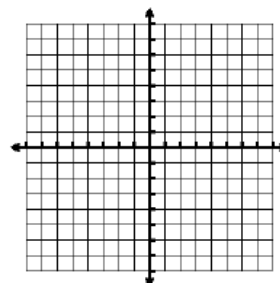
13. Can a linear function ever be even or odd? If so, sketch an example.

NO!

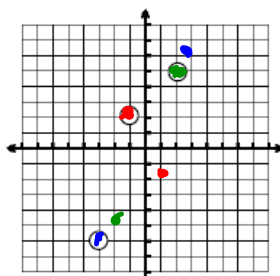


14. Can an exponential function ever be even or odd? If so, sketch an example.

NO!



15. If the following points are on an odd function, what other points are on the function? Give the coordinates.





## Essential Question: 1/11/18

How do I interpret key features of graphs in context?

**Standard:**

**MGSE9-12.F.IF.7a**

Graph linear and show intercepts, maxima, and minima (as determined by the function or by context).

# Characteristics of Linear Functions

Day 4 - Characteristics of Linear Functions.pptx

Domain, Range, x-intercept, y-intercept, intervals of increase and decrease, maxima, minima, positive and negative parts of the graph, end behavior.

# Functions End Behavior PPT

Functions - End Behavior.ppt



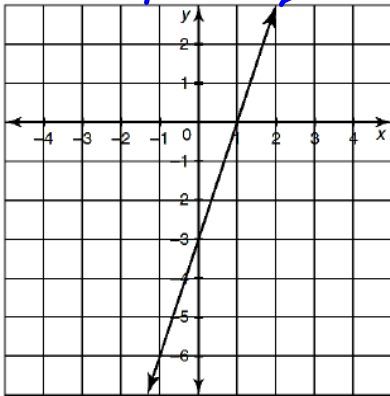
## Class Work Practice

Work with your table partner  
to complete # 1 - 4

$y = mx + b$

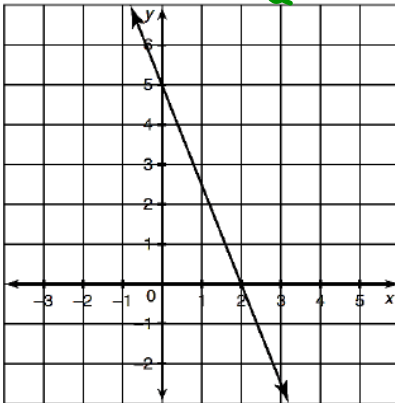
Determine the equation for each graph. Then identify all of the characteristics listed for the following graphs.

1. Equation:  $y = 3x - 3$



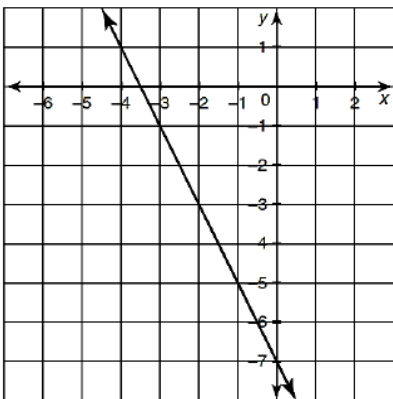
Domain:  $(-\infty, \infty)$   
 Range:  $(-\infty, \infty)$   
 X-Intercept:  $(1, 0)$   
 Y-Intercept:  $(0, -3)$   
 Zeros:  $x = 1$   
 Constant: none  
 Int. of Increase:  $-\infty < x < \infty$   
 Int. of Decrease: none  
 Maximum: none  
 Minimum: none  
 End Behavior: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$   
 As  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$

2. Equation:  $y = -\frac{5}{2}x + 5$



Domain:  $(-\infty, \infty)$   
 Range:  $(-\infty, \infty)$   
 X-Intercept:  $(2, 0)$   
 Y-Intercept:  $(0, 5)$   
 Zeros:  $x = 2$   
 Constant: none  
 Int. of Increase: N/A  
 Int. of Decrease:  $-\infty < x < \infty$   
 Maximum: none  
 Minimum: none  
 End Behavior: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$   
 As  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$

3. Equation:  $y = -2x - 7$



Domain:  $(-\infty, \infty)$  or all real #s      Range:  $(-\infty, \infty)$  or all real #s

X-Intercept:  $(-3.5, 0)$

Y-Intercept:  $(0, -7)$

Zeros:  $x = -3.5$

Int. of Increase: none

Int. of Decrease:  $-\infty < x < \infty$

Constant: none

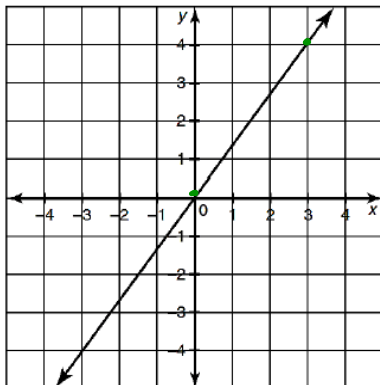
Maximum: none

Minimum: none

End Behavior: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$

4. Equation:  $y = \frac{4}{3}x$



Domain:  $(-\infty, \infty)$

Range:  $(-\infty, \infty)$

X-Intercept:  $(0, 0)$

Y-Intercept:  $(0, 0)$

Zeros:  $x = 0$

Int. of Increase:  $-\infty < x < \infty$

Int. of Decrease: none

Constant: none

Maximum: none

Minimum: none

End Behavior: As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$

As  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$

## Student Led Closing 1/11/18

- Review # 4





## Attachments

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Functions notation.ppt

Functions Practice HW.docx

Functions notation notes.ppt

Even Odd Functions Notes.pptx



Day 3 - Even and Odd - Homework.doc

Day 4 - Characteristics of Linear Functions.pptx

Functions - End Behavior.ppt