Lesson 2.4.2: Illustrating Linear Functions

Linear Function: a function whose graph is a slant line. It is in the form of f(x) = mx + b or y = mx + b where:

- f(x) or y is the dependent variable;
- x is the independent variable which we manipulate to get different results of y;
- *m* is the slope of the line;
- *b* is the constant term or the y-intercept;
- m and b are real numbers.

If $m \neq$ o, then the degree of the function is 1.

If m = o and $b \neq o$, then the degree is o.

If m = 0 and b = 0, then the degree is not defined.

Function Notation: If f is a function, the symbol f(x), read as "f of x," is used to denote the value of the function f at a given value of x.

Practice Exercises 2.4.2

A. Write Yes if the function is a linear function or No if it is not. If it is a linear function, determine the slope, y-intercept, and degree.

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

4.
$$f(x) = -(x+5)$$

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

3.
$$f(x) = -5$$

5.
$$f(x) = 10x^2 + 7x$$

B. Determine whether the function below is linear given the table.

1.	Х	-2	-1	0	1	2		
	у	1	2	3	4		5	
2.	Х	-2	-1	0	1	:	2	
	у	1	0	1	4	9		
3.	Х	-2	0	2	4		6	
	у	4	-2	-4	-2	-2		

4.	X	5	4	3	2		1	
	у	-1	2	5	8 :		.1	
5.	х	-2	-1	0	:	1	2	
	у	5	2	-1	. -	-4		

$\ensuremath{\mathsf{C}}.$ Evaluate the following function notations.

1. If
$$f(x) = 2x - 3$$
, find:
a. $f(0)$
b. $f(-1)$
c. $f(\frac{1}{2})$
2. If $f(x) = x - 1$, find:
a. $f(1)$
b. $f(-2)$
c. $f(\frac{1}{3})$

3. If
$$f(x) = \frac{1}{3}x + 1$$
, find:
a. $f(6)$

b.
$$f(-3)$$
c. $f(\frac{3}{4})$

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2.	Х	-2	-1	0	1	2	
	у	1	0	1	4	9	
3.	Х	-2	0	2	4	6	ĵ
	у	4	-2	-4	-2	: 4	1

4.	Х	5	4	3	2	1		ı
	у	-1	2	5	8	1	1	
5.	Х	-2	-1	0		1		:
	у	5	2	-1	. -	4	-7	7

C. Evaluate the following function notations.

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otations.

3. If
$$f(x) = \frac{1}{3}x + 1$$
, find:

C. Evaluate the following function notations. 1. If f(x) = 4x - 1, find: a. f(0)b. f(-1)c. $f(\frac{1}{2})$ 2. If f(x) = -2x + 3, find: a. f(1)b. f(-2)c. $f(\frac{3}{2})$

A. Write Yes if the function is a linear function or No if it is not. If it

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

X -2 -1 0 1 2

y -1 2 5 8 11

 X
 5
 4
 3
 2
 1

 Y
 4
 1
 0
 1
 4

X -2 -1 0 1 2

5. f(x) = 0

is a linear function, determine the slope, y-intercept, and degree.

B. Determine whether the function below is linear given the table.

-6 4 14 24

-5 | -4 | -3 | -2 | -1

Activity 2.4.2

Activity 2.4.2

1. f(x) = -6x - 7

3. f(x) = 2(x-3)

-16

y 15 11

2. f(x) = -4

A. Write Yes if the function is a linear function or No if it is not. If it is a linear function, determine the slope, y-intercept, and degree.

1.
$$f(x) = -6x - 7$$

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

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

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

5.
$$f(x) = 0$$

B. Determine whether the function below is linear given the table.

1.						
	х	-3	-1	1	3	5
	у	-16	-6	4	14	24
2.						
	Х	-5	-4	-3	-2	-1
	У	15	11	7	3	-1

3.	X	-2	-1		0		1		2		
	у	-1	2		5		8	3		1	
4.	Х	5	4	3		2		1			
	у	4	1		0		1		4		
5.	х	-2	-1)	1		2		
	у	-3	-1		1		3	5			
										_	

${\sf C.\ Evaluate\ the\ following\ function\ notations}.$

1. If
$$f(x) = 4x - 1$$
, find:
a. $f(0)$
b. $f(-1)$
c. $f(\frac{1}{2})$

3. If
$$f(x) = \frac{3}{2}x + 1$$
, find:
a. $f(2)$
b. $f(-4)$
c. $f(\frac{1}{2})$

2. If
$$f(x) = -2x + 3$$
, find:
a. $f(1)$
b. $f(-2)$
c. $f(\frac{3}{2})$