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;
- ullet 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.	Χ	-2	-1	0	1	2	2	
1.	у	1	2	3	4	Ę	5	
2.	Х	-2	-1	0	1	2	2	
2.	у	1	0	1	4	ç	9	
2	Х	-2	0	2	4		6	
3.	у	4	-2	-4	-2	2	4	

4.	Х	5	4	3	2	2		1	
	у	-1	2	5	8	8 1		1	
_	х	-2	-1	О		1	L	2	:
5.				Ι.				_	_

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:

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

a.
$$f(6)$$

b. $f(-3)$

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

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

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

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

3. If
$$f(x) = \frac{1}{3}x + 1$$
, find:
a. $f(6)$
b. $f(-3)$
c. $f(\frac{3}{4})$

a.
$$f(6)$$

b. $f(-3)$

a. f(1)

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

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

X -2 -1 0 1 2

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

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

$$f(x) = 2(x-3)$$
 5. $f(x) = 0$

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

	Х	-3	-1	1	3	5	3.	у	-1	2	5	8	1	11
	у	-16	-6	4	14	24		x	-	4	2	2	1	7
2.							4.	-	5	4	0	2		┨
	Х	-5	-4	-3	-2	-1		У	4	1	0	1	4	
	у	15	11	7	3	-1	-	Х	-2	-1	0	1	2	2
							5.	у	-3	-1	1	3	[5]

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

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

2. $f(x) = -4$
3. $f(x) = 2(x - 3)$
4. $f(x) = -4x^2$
5. $f(x) = 0$

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

								X	-2	-1	0	1	-	2	
	Х	-3	-1	1	3	5	3.	у	-1	2	5	8	3	11	
	у	-16	-6	4	14	24								\neg	_
			-	-			۸ .	X	5	4	3	2	1		
ſ					_		4.	У	4	1	0	1	4	1	
	X	-5	-4	-3	-2	-1			- 1				_		
ĺ	у	15	11	7	3	-1	E	Х	-2	-1	0	1	-	2	
							5.	У	-3	-1	1	3	3	5	

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