

Assignment

Write

Describe how the terms *constant difference*, *slope*, and *average rate of change* are related.

Remember

The explicit formula of an arithmetic sequence can be rewritten as a linear function in the general form $f(x) = ax + b$, where a and b are real numbers, using algebraic properties. The constant difference of an arithmetic sequence is always equal to the slope of the corresponding linear function.

Practice

- Rakesha claims that the equation $f(n) = 5n - 7$ is the function notation for the sequence that is represented by the explicit formula $a_n = -2 + 5(n - 1)$. James doesn't understand how this can be the case.
 - Help James by listing the steps to write the explicit formula of the given sequence in function notation. Provide a rationale for each step.
 - Graph the function. Label the first 5 values of the sequence on the graph.
- Determine whether each table of values represents a linear function. For those that represent linear functions, write the function. For those that do not, explain why not.

a.

x	$f(x)$
3	14
4	18
5	23
6	29

b.

x	$f(x)$
0	2
1	-1
2	-4
3	-7

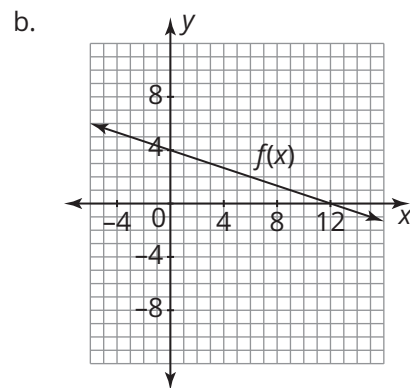
c.

x	$f(x)$
1	11
2	16
3	21
4	26

- Calculate the average rate of change for each linear function using the formula. Show your work.

a.

x	$f(x)$
3	-4
7	4
9	8
12	14



Stretch

Craig left his house at noon and drove 50 miles per hour until 3 PM. Then he drove the next 5 hours at 70 miles per hour. Graph Craig's driving trip and calculate the average rate of change for the entire trip.

Review

Evaluate each function for the given values.

1. $f(x) = 3x - 10$

a. $f(0)$

b. $f(5)$

2. $f(x) = 6$

a. $f(0)$

b. $f(-2)$

3. $f(x) = 9x + 7 - 3x$

a. $f(0)$

b. $f(0.5)$

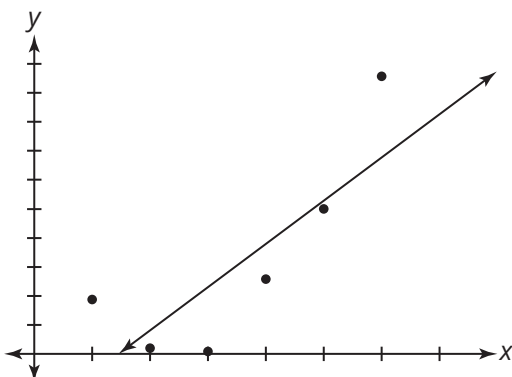
4. The linear regression equation for the given data is $y = -x + 19.7$. Complete the table for the linear regression equation, rounding your answers to the nearest tenth. Then construct and interpret a residual plot.

x	y	Predicted Value	Residual Value
2	17		
4	16		
6	15		
8	12		
10	9		
12	8		

5. The linear regression equation for the given data is $y = 3.93x - 11.33$, $r = 0.8241$. Consider the scatterplot, the correlation coefficient, and the corresponding residual plot. State whether a linear model is appropriate for the data.

x	2	4	6	8	10	12
y	9	2	1	12	25	48

Scatter Plot and Line of Best Fit



Residual Plot

