4.2 - Connecting Constant Difference, Slope, and Average Rate of Change

Write each explicit sequence then rewrite in function notation.

1. At the end of the last show, stagehands at the community theater stack the audience chairs and place them in storage. The height of one chair is 34 inches, and as each additional chair is stacked, the height increases by 8 inches.

$a_n =$ $f(n) =$

2. Gregory has agreed to donate $250 to Spring Valley High School for its library. In addition, he will donate $5 for every book a student at Spring Valley High School reads during the summer.

$a_n =$ $f(n) =$

3. Jake has 400 cookies. He eats 4 cookies a day.

$a_n =$ $f(n) =$

Determine if each table represents a linear function by using the first differences strategy.

4.

x	y
5	12
6	15
7	21
8	30

5.

x	y
−2	18
−1	14
0	10
1	6

6.

x	y
10	1
11	4
12	9
13	16

7.

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

8. Ricky claim 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.

a. Help James by listing the steps to write the explicit formula of the given sequence in function notation. Provide a rationale for each step.

b. Write the first 5 values of the sequence.

Review:

9. The linear regression equation for the given data is y = -x + 19.7. Complete the table for the linear regression equation, rounding your answer to the nearest tenth. Then use your calculator to construct and interpret the residual plot.

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

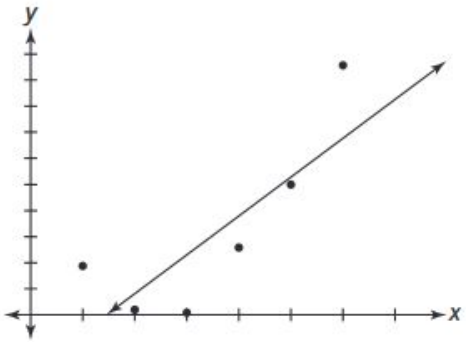
Interpretation of the residual plot:

10. 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 and why.

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

Answer:

Scatter Plot and Line of Best Fit



Residual Plot