

Comparing Functions in Different Formats - Guided Lesson Explanation

For all of these problems we are looking to compare the growth of the data or lack of growth. Growth of data can be gauged by the slope of the line created by the data. In a sense, slope indicates the rate of change.

The steeper the slope of the line created by the data, the more growth. If you are looking for lack of growth in the data, you are looking for shallow rise in the slope, when compared to another set of data.

Slope intercept form is defined as $y = mx + b$

m = slope b = y-intercept (where the line cross the y-axis)

You can also determine the slope (m) using the following equation when x_1 is not equal to x_2

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Explanation #1

Step 1) Find two points where x_1 is not equal to x_2 for both functions.

Function 1: I chose points (1,2) and (6, 12)

Function 2: I chose points (-2,3) and (2, 5)

Step 2) Determine the slope (m) for both functions based off of the points that were chosen.

$$\text{Function 1: } \frac{12 - 2}{6 - 1} = \frac{10}{5} = 2$$

$$\text{Function 2: } \frac{5 - 3}{2 - -2} = \frac{2}{4} = 0.5$$

Step 3) Interpret the difference in slope between the functions.

Function 1's slope is much greater. This indicates that Function 1 grows faster for large positive values of x .



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Explanation #2

In this one we are looking for a lack of growth. That makes it a very easy problem.

Step 1) Find two points where x_1 is not equal to x_2 for both functions.

Function 1: I chose points (2,4) and (14, 196)

Function 2: I chose points (-7,3) and (2, -6)

Step 2) We really don't need to go much further with this problem.

The line of function 1 is increasing, while the line of function 2 is decreasing. That simply indicates that function 2, not only has a slower growth rate, but is showing a steep decline.

Explanation #3

In this one we are looking for a lack of growth. That makes it a very easy problem.

Step 1) Find two points where x_1 is not equal to x_2 for both functions.

Function 1: I chose points (2,8) and (8, 512)

Function 2: I chose points (0,-9) and (2, 8)

There is no need to go further with this problem. We can easily see that Function 1's growth is skyrocketing compared to Function 2.

Another easy read came from the type of functions we were working with. Function 1 is an exponential function. Exponential functions have at least one exponent involved which indicates a great level of growth.

Function 2 is a linear function. The graphs of linear functions are straight lines.

