

Finding Slope from Tables

Homework

Name _____

Date _____ Period _____

Determine the slope of the line represented by the table of values. Describe the graphs of the line as increasing, decreasing, horizontal, or vertical. Copy one of these tables on the back of this page and write a situation that describes the data.

1. *run rise*

x	y
-2	3
-1	5
0	7
1	9
2	11

+1 < > +2

$$m = \frac{2}{1} = 2$$

Graph Description
increasing

2. *run rise*

x	y
-3	5
-2	2
-1	-1
0	-4
1	-7

+1 < > -3

$$m = \frac{-3}{1} = -3$$

Graph Description
decreasing

3. *run rise*

x	y
1	-17
2	-13
3	-9
4	-5
5	-1

+1 < > +4

$$m = \frac{4}{1} = 4$$

Graph Description
increasing

4. *run rise*

x	y
-6	-4
-5	-9
-4	-14
-3	-19
-2	-24

+1 < > -5

$$m = \frac{-5}{1} = -5$$

Graph Description
decreasing

5.

x	y
0	3
1	5.5
2	8
3	10.5
4	13

+1 < > +2.5

$$m = \frac{2.5}{1} = 2.5$$

Graph Description
inc

6.

x	y
-2	5
-1	4.75
0	4.5
1	4.25
2	4

+1 < > -.25

$$m = \frac{-.25}{1} = -\frac{1}{4}$$

Graph Description
decreasing

7.

x	y
-2	$\frac{2}{5}$
-1	$\frac{4}{5}$
0	$\frac{6}{5}$
1	$\frac{8}{5}$

+1 < > +2/5

$$m = \frac{2/5}{1} = \frac{2}{5}$$

Graph Description
increasing

8.

x	y
-1	1
1	2
3	3
5	4
7	5

+2 < > +1

$$m = \frac{1}{2}$$

Graph Description
increasing

9.

x	y
-5	10
-2	5
1	0
4	-5
7	-10

+3 < > -5

$$m = \frac{-5}{3}$$

Graph Description
dec

10.

x	y
-5	10
-3	6
-1	2
1	-2
3	-6

+2 < > -4

$$m = \frac{-4}{2} = -2$$

Graph Description
decreasing

11.

x	y
-4	6
-2	6
0	6
2	6
4	6

+2 < > +0

$$m = \frac{0}{2} = 0$$

Graph Description
horizontal

12.

x	y
5	2
5	4
5	6
5	8
5	10

+0 < > +2

$$m = \frac{2}{0} = \text{undefined}$$

Graph Description
vertical

3.4B Rate of Change = SLOPE

For each of the following functions, is the average rate of change over the given interval positive or negative? Justify your answer.

1.) $f(x) = 3 - 2x$ over the interval $[2, 3]$

$x_1 = 2, x_2 = 3$

$y_1 = f(2) = 3 - 2(2) = -1$

$y_2 = f(3) = 3 - 2(3) = -3$

$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - (-1)}{3 - 2} = \frac{-2}{1} = -2$

2.) $h(x) = 0.5^x$ over the interval $[-1, 0]$

$x_1 = -1, x_2 = 0$

$y_1 = h(-1) = 0.5^{(-1)} = 2$

$y_2 = h(0) = 0.5^{(0)} = 1$

$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 2}{0 - (-1)} = \frac{-1}{1} = -1$

3.) $g(x) = 1.5^x$ over the interval $[-1, 0]$

$x_1 = -1, x_2 = 0$

$y_1 = g(-1) = 1.5^{(-1)} = \frac{2}{3}$

$y_2 = g(0) = 1.5^{(0)} = 1$

$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - \frac{2}{3}}{0 - (-1)} = \frac{\frac{1}{3}}{1} = \frac{1}{3}$

4.) $k(x) = 4 + 3x$ over the interval $[-2, 3]$

$x_1 = -2, x_2 = 3$

$y_1 = k(-2) = 4 + 3(-2) = -2$

$y_2 = k(3) = 4 + 3(3) = 13$

$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{13 - (-2)}{3 - (-2)} = \frac{15}{5} = 3$

5.) $m(x) = 7 - 3x$ over the interval $[2, 5]$

$x_1 = 2, x_2 = 5$

$y_1 = m(2) = 7 - 3(2) = 1$

$y_2 = m(5) = 7 - 3(5) = -8$

$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 1}{5 - 2} = \frac{-9}{3} = -3$

Given a table, find the rate of change for each interval.

11.)

	x	y	
x_1	-2	-1	y_1
	-1	-5	
x_1	0	0	y_1
x_1	1	.5	y_1
x_2	2	1	y_2
x_2	3	1.5	y_2
x_2	4	2	y_2

A.) $[1, 4]$ $M = \frac{2 - .5}{4 - 1} = \frac{3/2}{3} = \frac{1}{2}$

B.) $[-2, 2]$ $M = \frac{1 - (-1)}{2 - (-2)} = \frac{2}{4} = \frac{1}{2}$

C.) $[0, 3]$ $M = \frac{1.5 - 0}{3 - 0} = \frac{1.5}{3} = \frac{1}{2}$

12.)

	x	y	
	-3	13	
x_1	-2	9	y_1
	-1	5	
x_2	0	1	y_2
x_1	1	-3	y_1
	2	-7	

A.) $[-2, 0]$ $M = \frac{1 - 9}{0 - (-2)} = \frac{-8}{2} = -4$

B.) $[1, 3]$

oops - graph table is cut off. Don't have enough info to complete