DETERMINING SLOPE USING TWO POINTS

Use the slope formula $m = \dfrac{rise}{run} = \dfrac{y_2 - y_1}{x_2 - x_1}$ to find the slope of the line through each of the points.

1. (2, 0) and (1, −4)

$x_1\ y_1 \quad x_2\ y_2$

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

$= \dfrac{-4 - 0}{1 - 2}$

$= \dfrac{-4}{-1}$

$= 4$

2. (−2, 3) and (6, 9)

$x_1\ y_1 \quad x_2\ y_2$

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

$= \dfrac{9 - 3}{6 - (-2)}$

$= \dfrac{6}{8} = \dfrac{3}{4}$

3. (0, −5), (3, 0)

$x_1\ y_1\ x_2\ y_2$

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

$= \dfrac{0 - (-5)}{3 - 0}$

$= \dfrac{5}{3}$

4. (13, −18), (−8, −17)

$x_1\ y_1 \quad x_2\ y_2$

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

$= \dfrac{-17 - (-18)}{-8 - 13}$

$= \dfrac{1}{-21}$

5. (−18, 5) and (−5, 17)

$x_1\ y_1 \quad x_2\ y_2$

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

$= \dfrac{17 - 5}{-5 - (-18)}$

$= \dfrac{12}{13}$

6. (6, −6) and (−7, 20)

$x_1\ y_1 \quad x_2\ y_2$

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

$= \dfrac{20 - (-6)}{-7 - 6}$

$= \dfrac{26}{-13}$

$= -2$

7. (−2, 3), (2, 3)

$x_1\ y_1\ x_2\ y_2$

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

$= \dfrac{3 - 3}{2 - (-2)}$

$= \dfrac{0}{4}$

$= 0$

What do you think this line looks like? horizontal line Sketch a rough graph to see if you are right.

8. (3, 3), (3, −1)

$x_1\ y_1\ x_2\ y_2$

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

$= \dfrac{-1 - 3}{3 - 3}$

$= \dfrac{-4}{0}$ can't have a zero in the denominator

∴ undefined

What do you think this line looks like? vertical line Sketch a rough graph to see if you are right.

Answers: 1) 4   2) $\dfrac{3}{4}$ 3) $\dfrac{5}{3}$ 4) $-\dfrac{1}{21}$ 5) $\dfrac{12}{13}$ 6) -2   7) 0, horizontal line   8) undefined, vertical line

Use the slope formula $m = \dfrac{rise}{run} = \dfrac{y_2 - y_1}{x_2 - x_1}$ to find the slope of the line represented by each table

1)

x	y
1 x_1	0 y_1
2	2
3 x_2	4 y_2

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

$= \dfrac{4-0}{3-1}$

$= \dfrac{4}{2}$

$= 2$

2)

x	Y
-2 x_1	-5 y_1
0	-2
2 x_2	1 y_2

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

$= \dfrac{1-(-5)}{2-(-2)}$

$= \dfrac{6}{4}$

$= \dfrac{3}{2}$

3)

x	y
2 x_1	-5 y_1
4	-3
6 x_2	-1 y_2

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

$= \dfrac{-1-(-5)}{6-2}$

$= \dfrac{4}{4}$

$= 1$

4)

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

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

$= \dfrac{-2-4}{5-1}$

$= \dfrac{-6}{4}$

$= -\dfrac{3}{2}$

5)

x	y
-3 x_1	6 y_1
-2	-1
-1 x_2	-8 y_2

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

$= \dfrac{-8-6}{-1-(-3)}$

$= \dfrac{-14}{2}$

$= -7$

6)

x	Y
2 x_1	4 y_1
-4	-8
5 x_2	10 y_2

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

$= \dfrac{10-4}{5-2}$

$= \dfrac{6}{3}$

$= 2$

7)

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

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

$= \dfrac{3-5}{2-0}$

$= \dfrac{-2}{2}$

$= -1$

8)

x	y
-2 x_1	6 y_1
0	0
2 x_2	-6 y_2

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

$= \dfrac{-6-6}{2-(-2)}$

$= \dfrac{-12}{4}$

$= -3$