

Lesson 1.5.1: Slope of a Line

Slope: the steepness of a line

How to Find the Slope:

- Case 1: If two points on the line are given.
The slope m of the line passing through two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is given by $m = \frac{y_2 - y_1}{x_2 - x_1}$, where $x_1 \neq x_2$.

- Case 2: If the equation is given.

If the linear equation is written in the form $y = mx + b$, m is the slope, that is, the slope is always the numerical coefficient of x .

- Case 3: If the graph is given.

$$\text{slope} = m = \frac{\text{rise}}{\text{run}} = \frac{\text{vertical change}}{\text{horizontal change}}$$

Slope (m)	Trend
Positive	Increasing
Negative	Decreasing
Zero	Horizontal
Undefined	Vertical

Practice Exercises 1.5.1

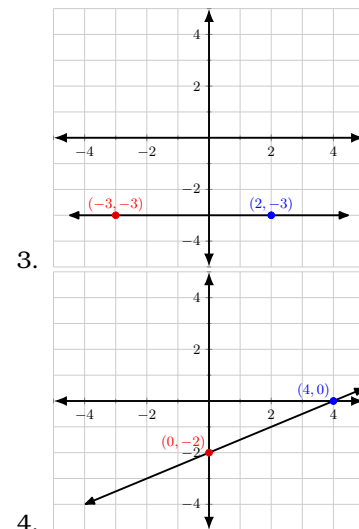
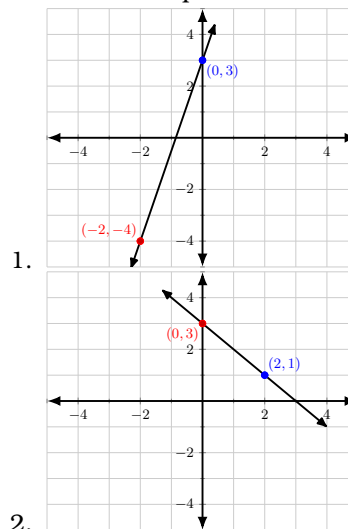
A. Find the slope of the line passing through each pair of points.

- $(8, 10), (-7, 14)$
- $(-3, 1), (-17, 2)$
- $(-20, -4), (-12, -10)$
- $(-12, -5), (0, -8)$
- $(-19, -6), (15, 16)$

B. Determine the slope and trend of each line.

- $y = 2x - 5$
- $y = x + 6$
- $y = \frac{2}{3}x - \frac{1}{2}$
- $7x - 3y - 10 = 0$
- $x = 8$

C. Find the slope of each line.



Activity 1.5.1

A. Find the slope of the line passing through each pair of points.

- $(-2, -4), (0, 3)$
- $(0, 3), (2, 1)$
- $(-3, -3), (2, -3)$
- $(0, -2), (4, 0)$
- $(-2, 3), (-2, -4)$

B. Determine the slope and trend of each line.

- $y = -3x + 7$
- $y = \frac{1}{4}x - 8$
- $2x - y = 5$
- $\frac{1}{2}x + \frac{1}{4}y - 8 = 0$
- $2y + 1 = 0$

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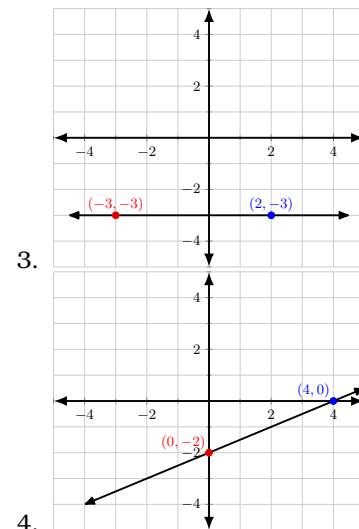
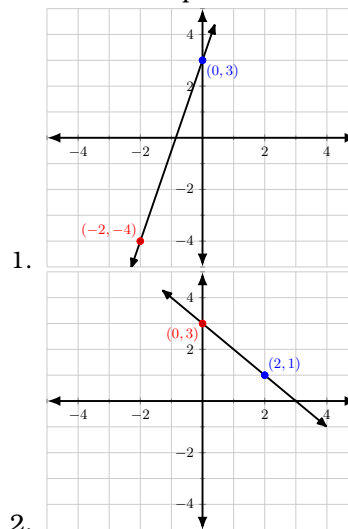
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