

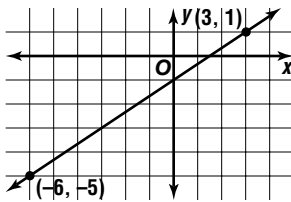
Slope

(Pages 284–289)

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|---|--|
| Definition of Slope | <p>The steepness of a line in the coordinate plane is called its slope. It is defined as the ratio of the <i>rise</i>, or vertical change, to the <i>run</i>, or horizontal change, as you move from one point to another.</p> $\text{slope} = \frac{\text{change in } y}{\text{change in } x}$ |
| Determining Slope Given Two Points | <p>Given the coordinates of two points, (x_1, y_1) and (x_2, y_2), on a line, the slope m of the line can be found as follows.</p> $m = \frac{y_2 - y_1}{x_2 - x_1}, \text{ where } x_1 \neq x_2$ |

EXAMPLES

A Determine the slope of the line.



$$\begin{aligned} \text{slope} &= \frac{\text{change in } y}{\text{change in } x} \\ &= \frac{1 - (-5)}{3 - (-6)} \\ &= \frac{6}{9} \text{ or } \frac{2}{3} \end{aligned}$$

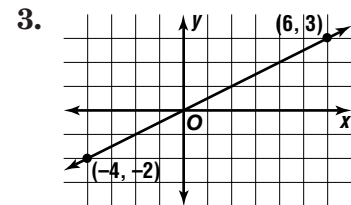
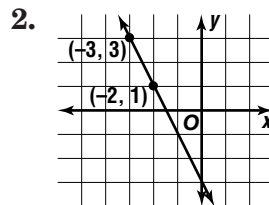
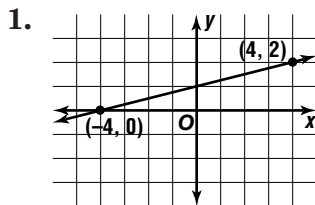
B What is the slope of the line that passes through points at $(4, -6)$ and $(-2, 3)$?

Let $x_1 = 4$, $y_1 = -6$, $x_2 = -2$, and $y_2 = 3$.

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ m &= \frac{3 - (-6)}{-2 - 4} \\ m &= \frac{9}{-6} \text{ or } -\frac{3}{2} \end{aligned}$$

PRACTICE

Determine the slope of each line.



Determine the slope of each line.

- the line through points at $(9, 3)$ and $(7, 6)$
- the line through points at $(-3, -2)$ and $(9, -5)$
- the line through points at $(2, 2)$ and $(7, -3)$



7. Standardized Test Practice What is the slope of the line that passes through $(1, -3)$ and $(-2, 6)$?

A -3

B -1

C 1

D 3

Answers: 1. $\frac{4}{1}$ 2. $-\frac{2}{1}$ 3. $\frac{2}{1}$ 4. $-\frac{2}{3}$ 5. $-\frac{2}{3}$ 6. $-\frac{4}{1}$ 7. A