TOPIC: SLOPE OF A LINE

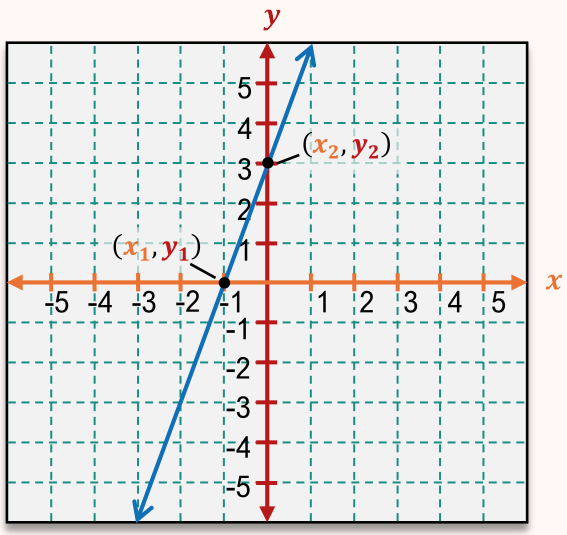
Finding The Slope of a Line

◆ Given a line, you will need to find the **slope** (m), which tells you how _____ a line is.

► The slope can be found by _____ how much y **changes (_____)** by how much x **changes (_____)**.

EXAMPLE Identify two points on the graph and calculate the slope.

New **Finding Slope from a Graph**



$$m = \frac{rise}{run} = \text{_____} = \frac{\Delta y}{\Delta x}$$

Δ = "change"

$m =$ ____ $=$

$(x_1, y_1) = (-1, 0)$

$(x_2, y_2) = (0, 3)$

$m =$ _____ $=$

◆ It does not matter which point you choose as (x_1, y_1) & (x_2, y_2) as long as you subtract in the correct order.

EXAMPLE Find the slope of each line given two points that exist on the line.

$(1,2), (4,5)$

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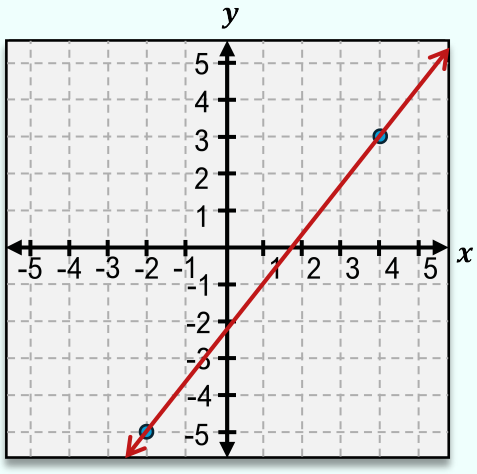
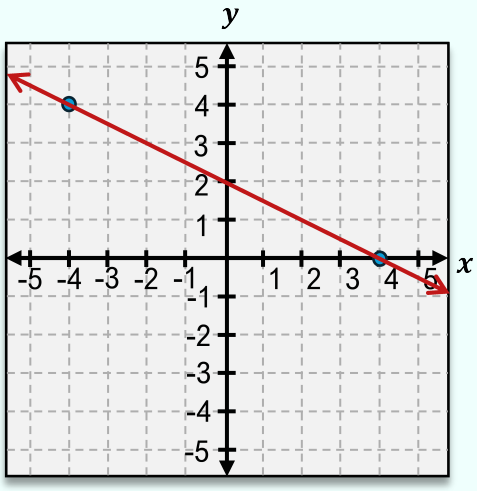
EXAMPLE Find the slope of the following line based on the two indicated points.



EXAMPLE Find the slope of the following line based on the two indicated points.



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EXAMPLE Find the slope of the following line. *Hint: Find the x- and y-intercepts first.*

$$2x + 3y = 12$$

PRACTICE Find the slope of the following lines.

$(\boldsymbol{A})$

$$\frac{1}{2}x - \frac{2}{3}y = 4$$

$(\boldsymbol{B})$

$$0.5x + 0.2y = 3$$

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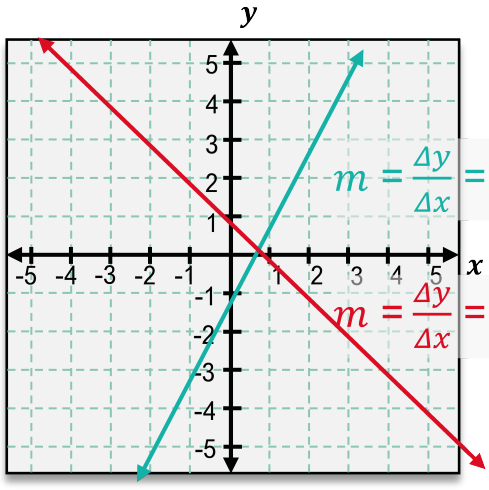
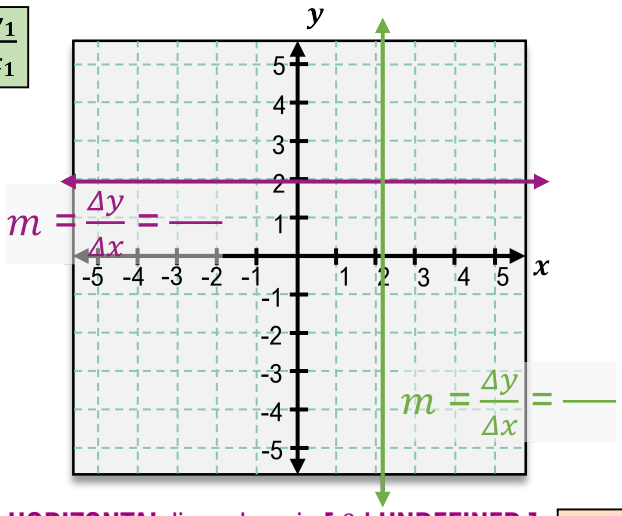
Types of Slope

◆ Slope can be **positive**, **negative**, **zero**, or **undefined**.



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

(*Slope*)



If line goes **UP** from left to right, slope is **[+ | –]**

If line goes **DOWN** from left to right, slope is **[+ | –]**

HORIZONTAL line: slope is **[0 | UNDEFINED]** $y = \#$

VERTICAL line: slope is **[0 | UNDEFINED]** $x = \#$

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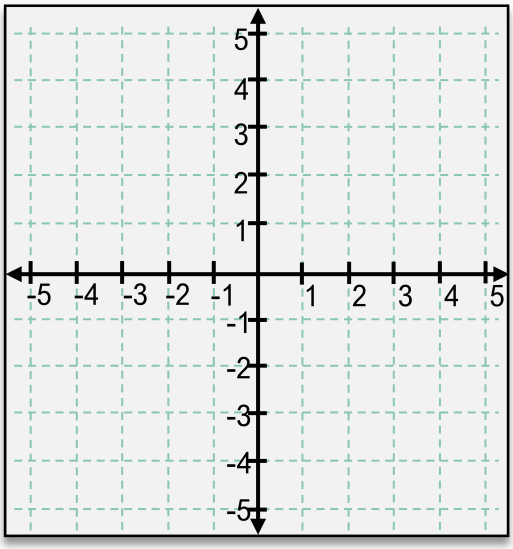
PRACTICE Graph a line with a slope of 0 that passes through the point $(3, -2)$.

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

(*Slope*)



PRACTICE Which of the following graphs below represents the equation $x = 3$?

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

(*Slope*)