

TOPIC: SLOPE OF A LINE

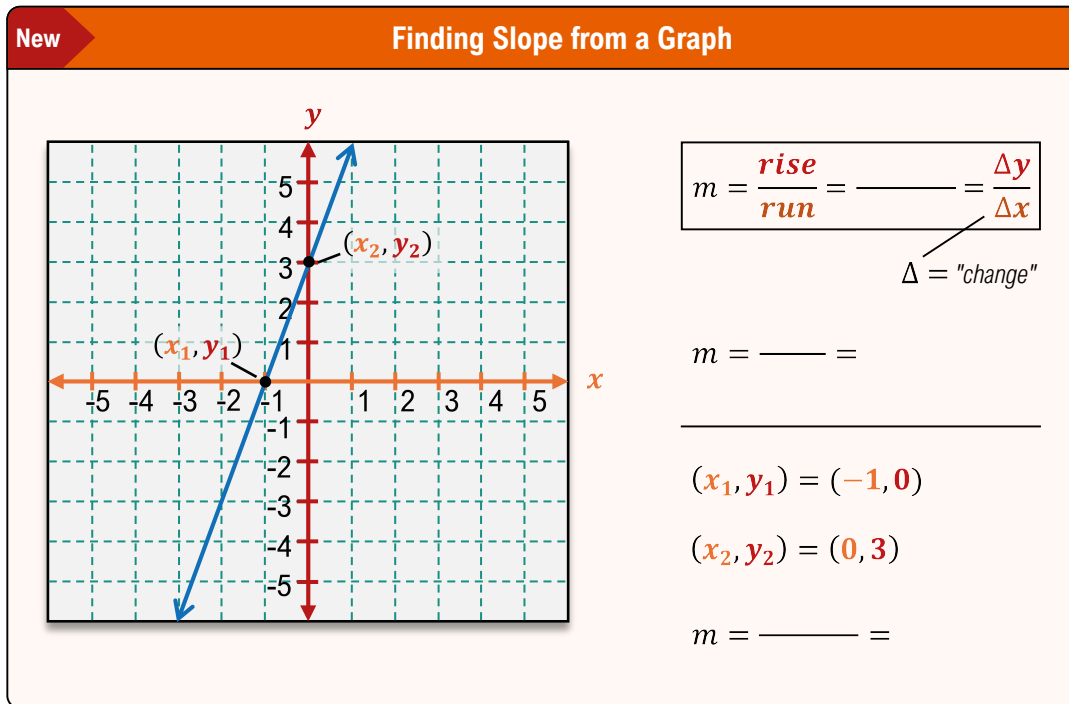
Finding The Slope of a Line

◆ 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.



◆ 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

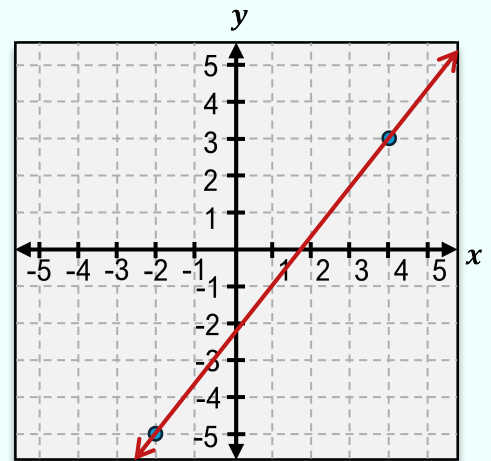
Find the slope of each line given two points that exist on the line.

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

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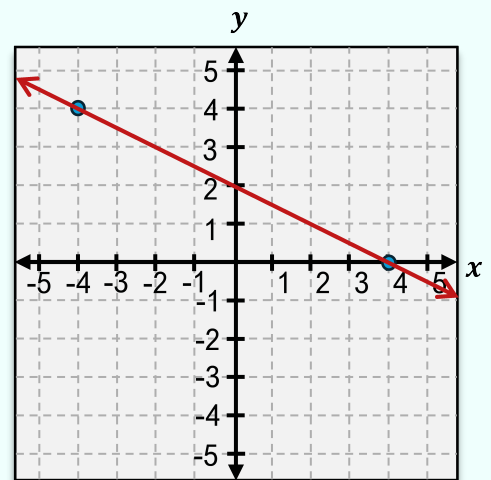
EXAMPLE

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



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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.

(A)

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

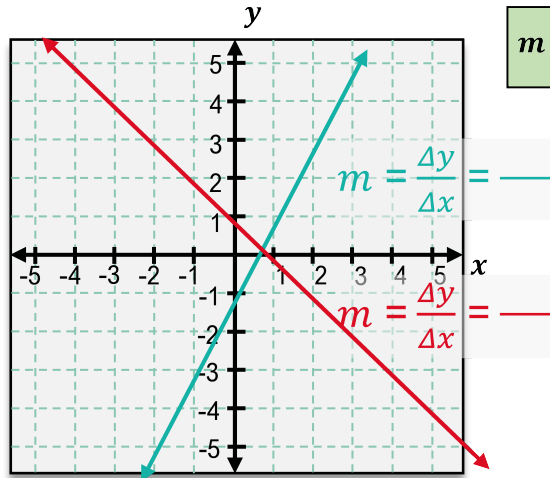
(B)

$$0.5x + 0.2y = 3$$

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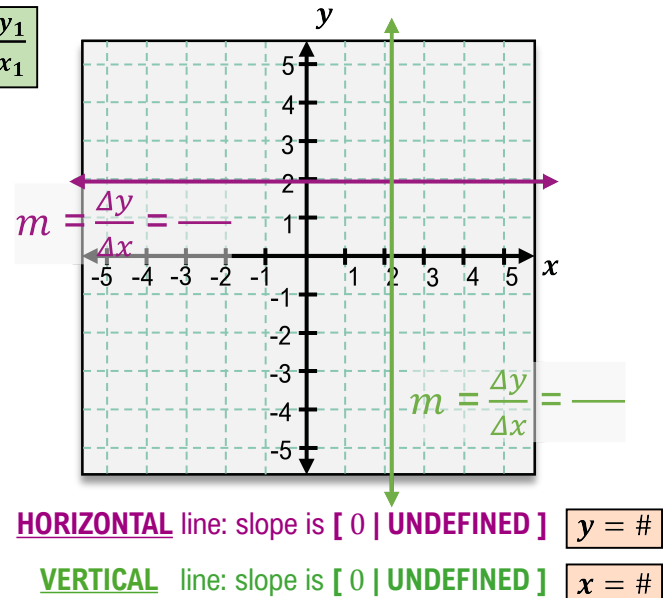
Types of Slope

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



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

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



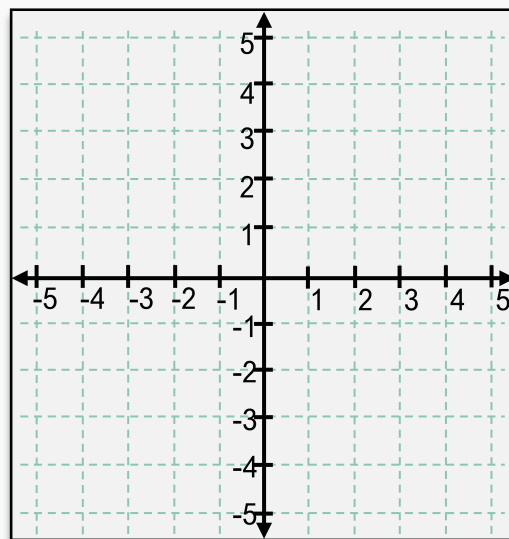
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PRACTICE

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)

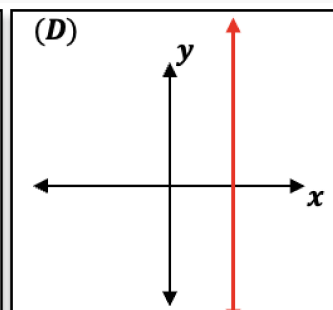
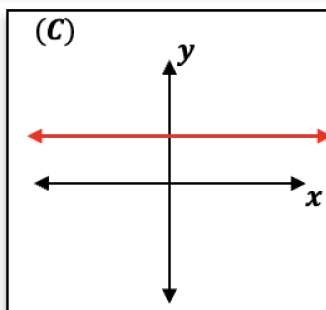
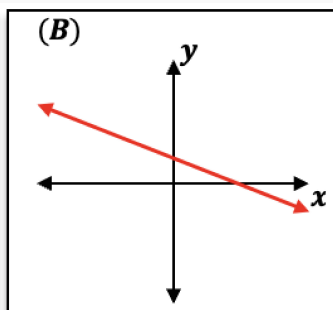
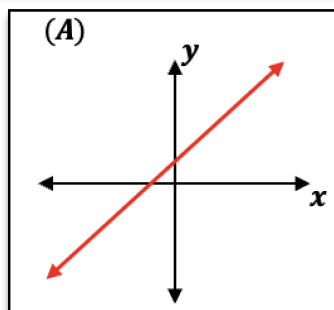


PRACTICE

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)



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Graphing a Line From Its Slope

◆ Recall: The slope of a line is the change in y (**rise**) divided by the change in x (**run**):

Recall

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

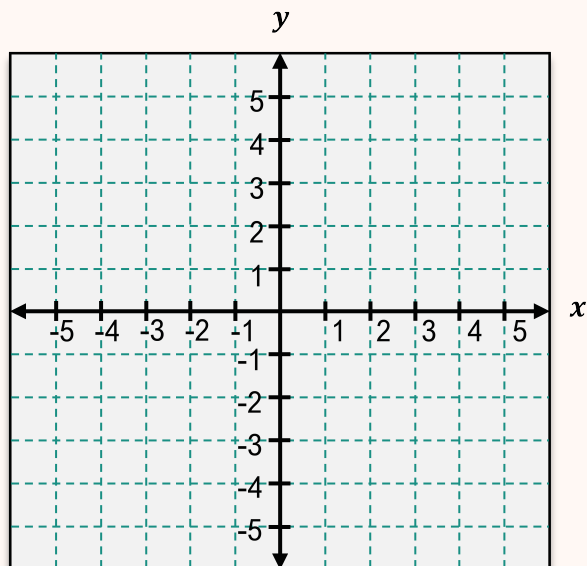
► We can graph a line with 1 _____ & the _____, by **rising** y units & **running** x units from the initial point.

New

Graphing a Line Using Slope

Point: $(1, 0)$

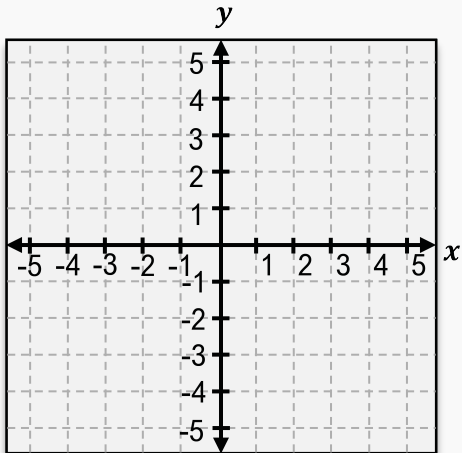
Slope: $m = 2 = \frac{\text{rise}}{\text{run}} \rightarrow$
rise $[\uparrow | \downarrow]$
run $[\rightarrow | \leftarrow]$



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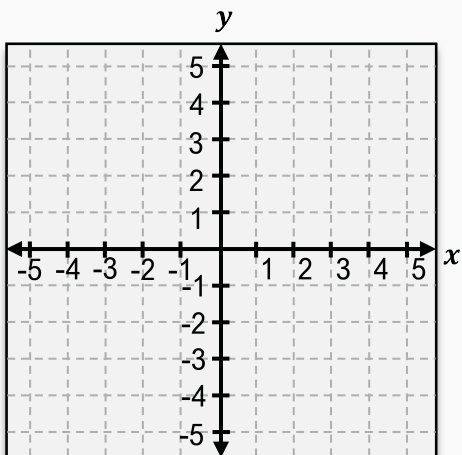
PRACTICE

Graph the line having a slope of -4 and passes through $(-1, 5)$.



PRACTICE

Graph the line having a slope of $\frac{1}{3}$ and passes through $(4, 3)$.



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EXAMPLE

A ladder is leaning against a wall with a slope of $\frac{3}{4}$. If the bottom of the ladder is 8 feet from the wall, how high up the wall does the ladder reach?