Warmup 9/(Oscar's age) – (Big Bird's age, + Zoe's age + Elmo's age + Grover's age + Snufflupagus' age)

Throwback Thursday

Simplify the following by cross canceling:

1. $\frac{15}{12} \cdot \frac{20}{50} = \frac{10}{10} = 1$

2. $\frac{1}{1}\frac{8}{4} \cdot \frac{64}{256}{}_{3} = \frac{64}{3}$

3. $\frac{14}{9} \div \frac{21}{81} =$

$\frac{2}{1}\frac{14}{9} \cdot \frac{81}{21}{}_{3}^{9} = \frac{18}{3} = 6$

4. $\frac{10}{15} \div \frac{90}{25} \cdot \frac{9}{5} =$

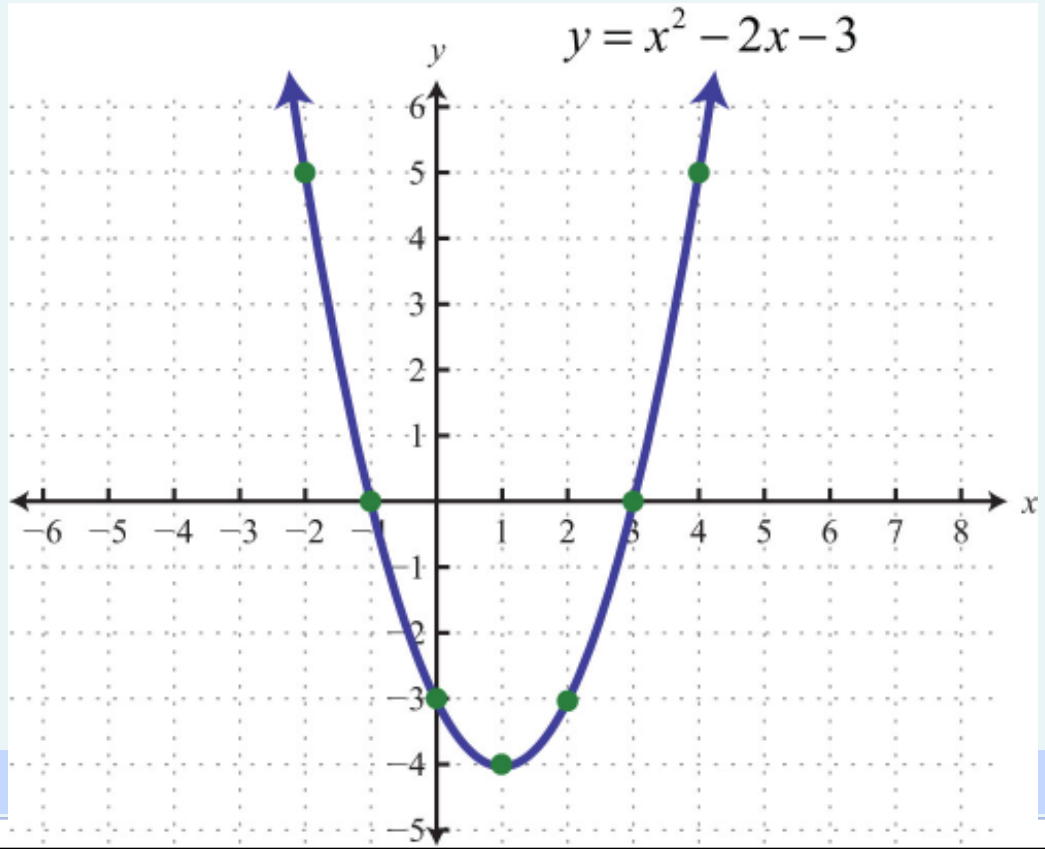
$\frac{1}{3}\frac{10}{15} \cdot \frac{5}{90}{}_{1}^{5} \cdot \frac{9}{5}{}_{1} = \frac{1}{3}$

NEW UNIT!

- **In the last unit, we learned about ALL DIFFERENT types of functions…**

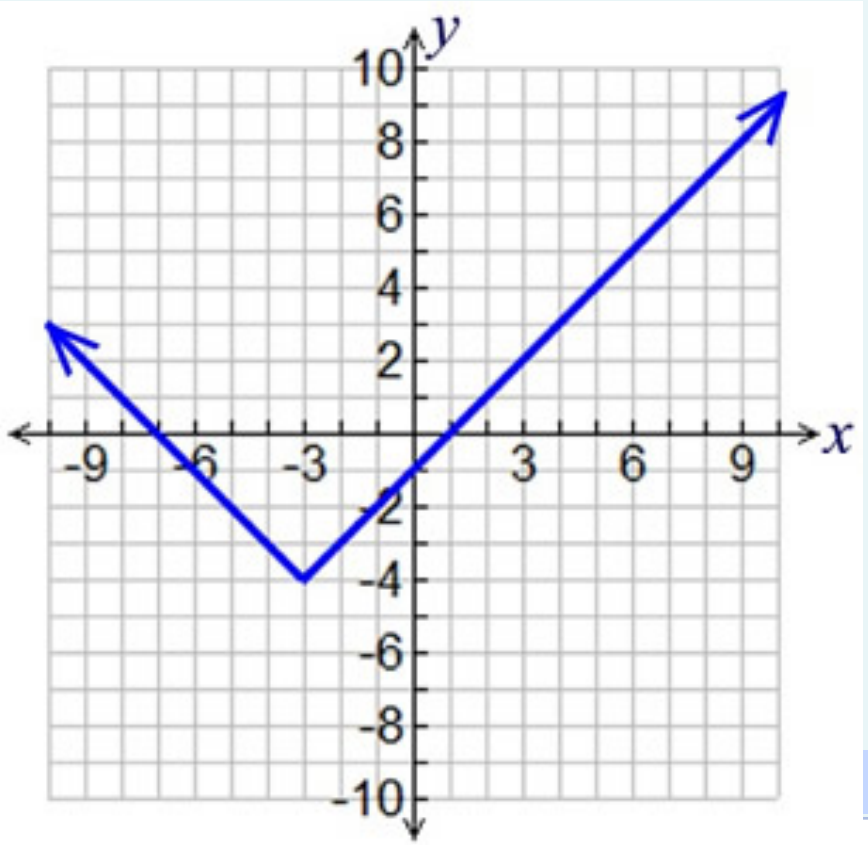
Types of Functions

- **Functions with an x^2 term make parabolas…**



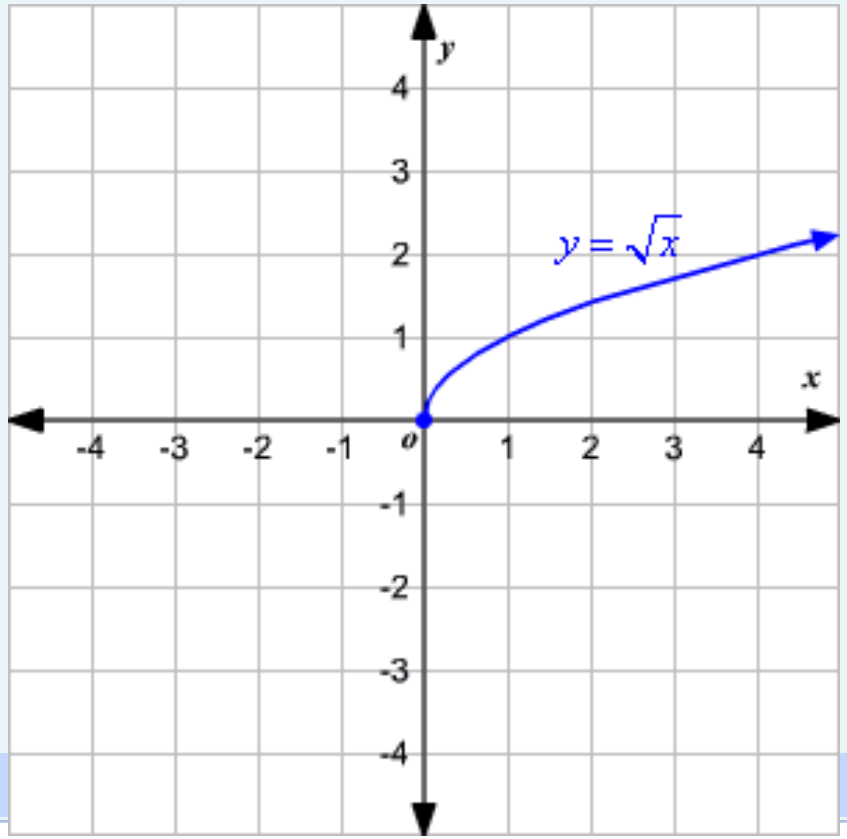
Types of Functions

- **Functions with absolute value make a "v" shape…**



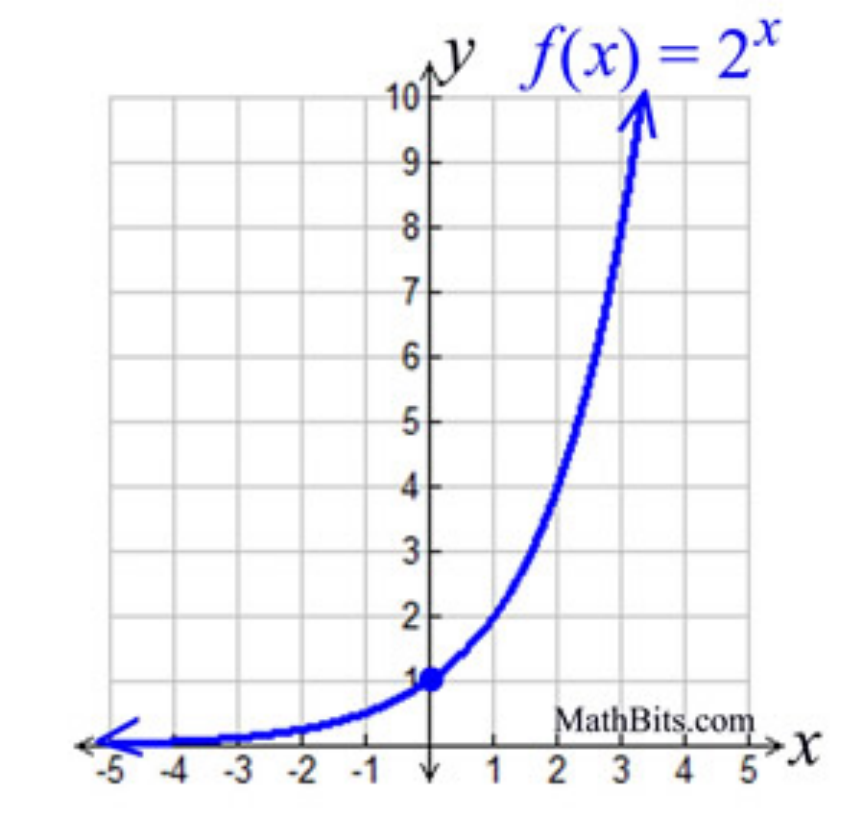
Types of Functions

- **Functions with a square root make this shape…**



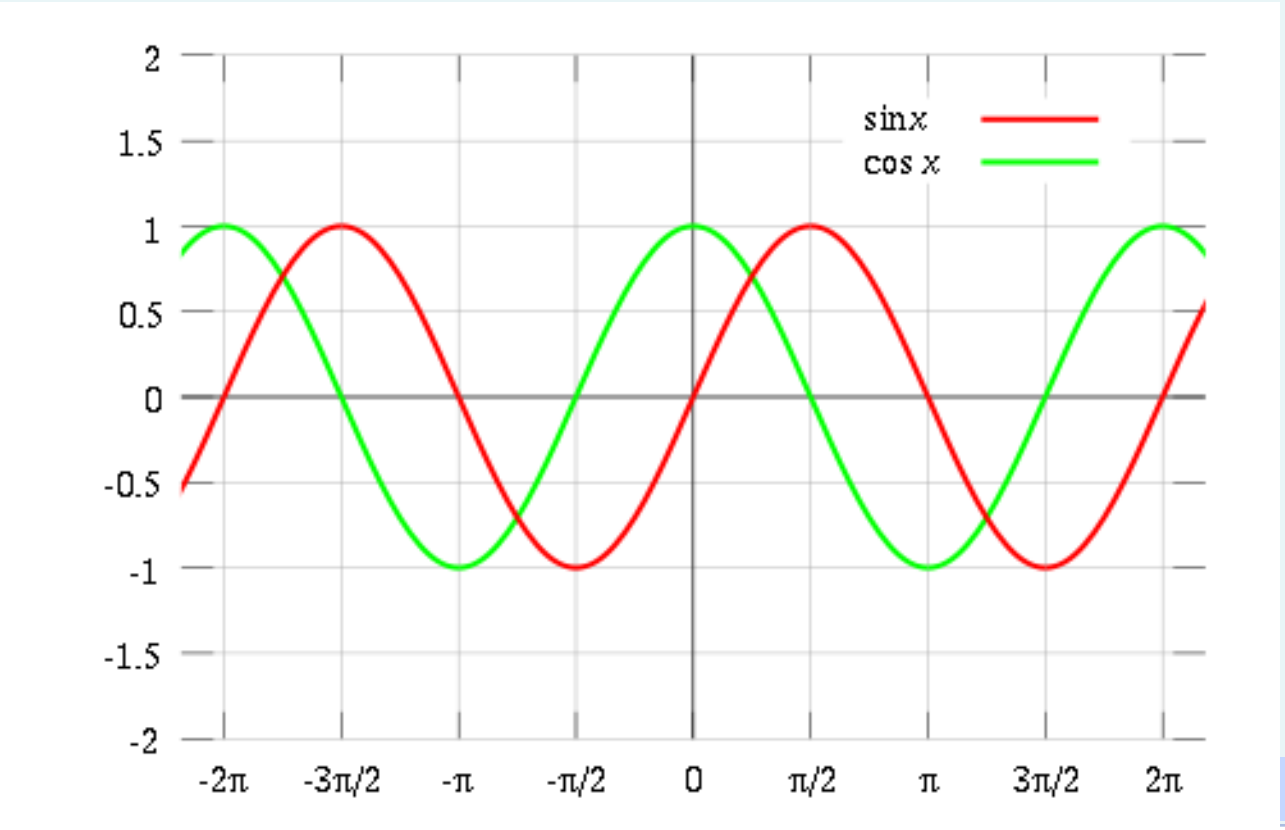
Types of Functions

- **Functions with a variable as an exponent make this shape…**



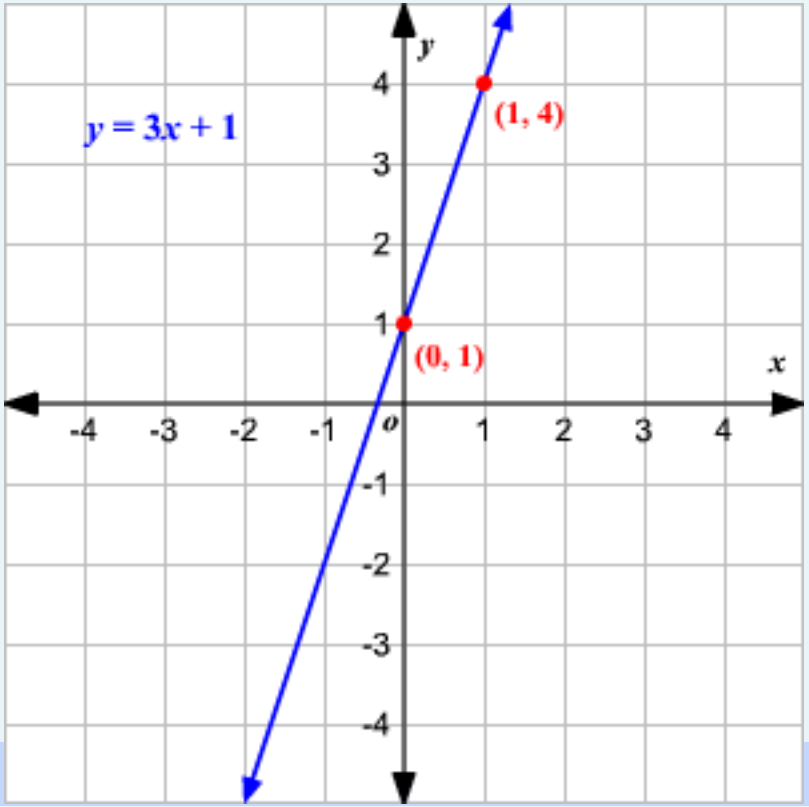
Types of Functions

- **Functions with “sin” and “cos” make wavy graphs…**



Types of Functions

- **…and functions with the form □x + □ make straight lines!**



In this unit…

- We are going to now focus exclusively on **linear** graphs. These are probably the most common, and useful, type of function.

- Anything that has a constant rate is linear!

Add to your table of contents…

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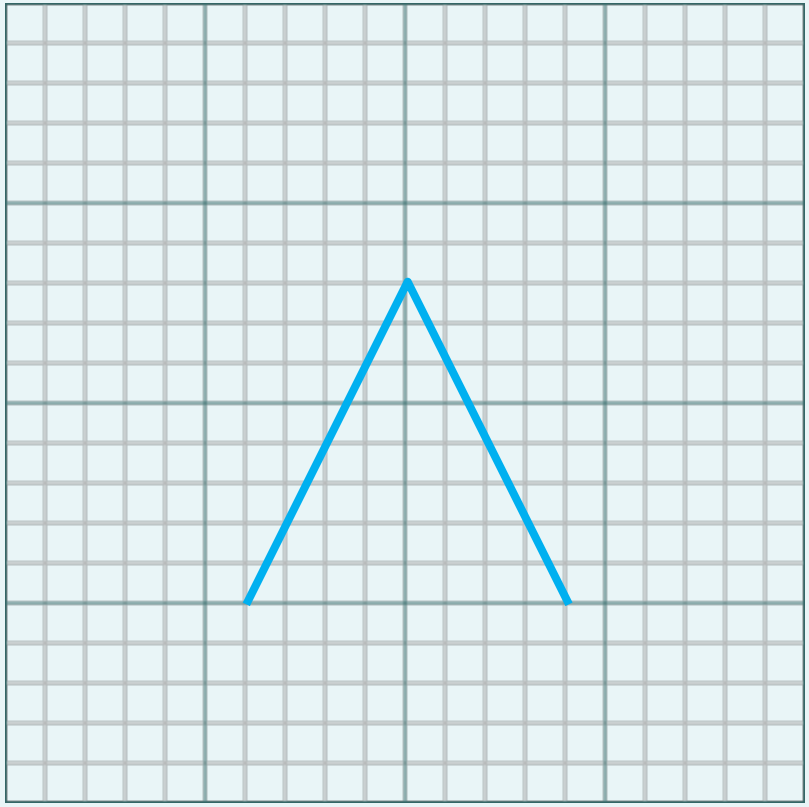
Slope

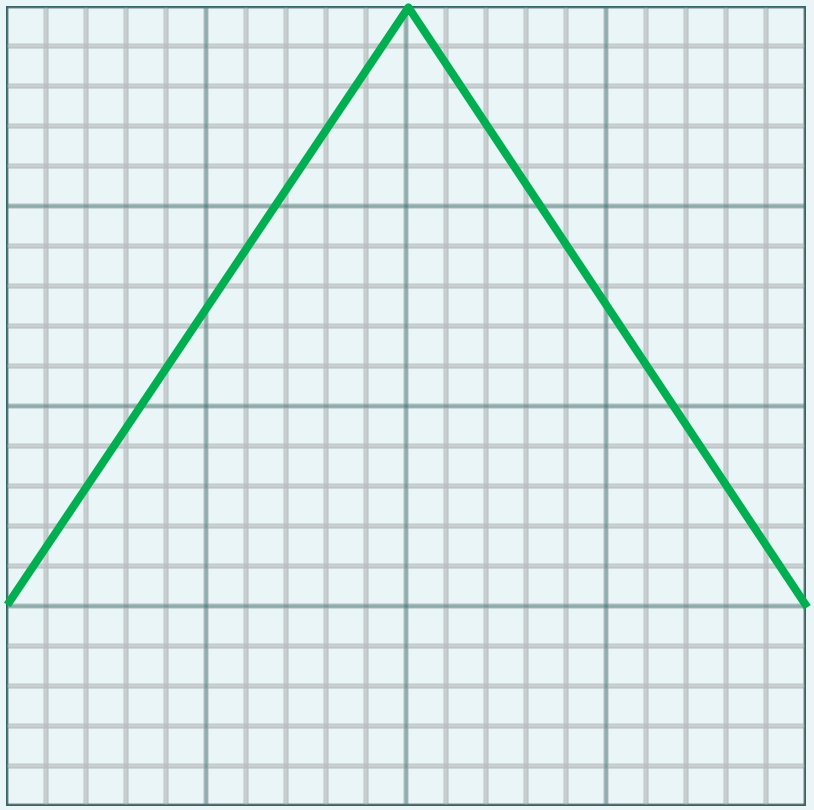
Objectives:

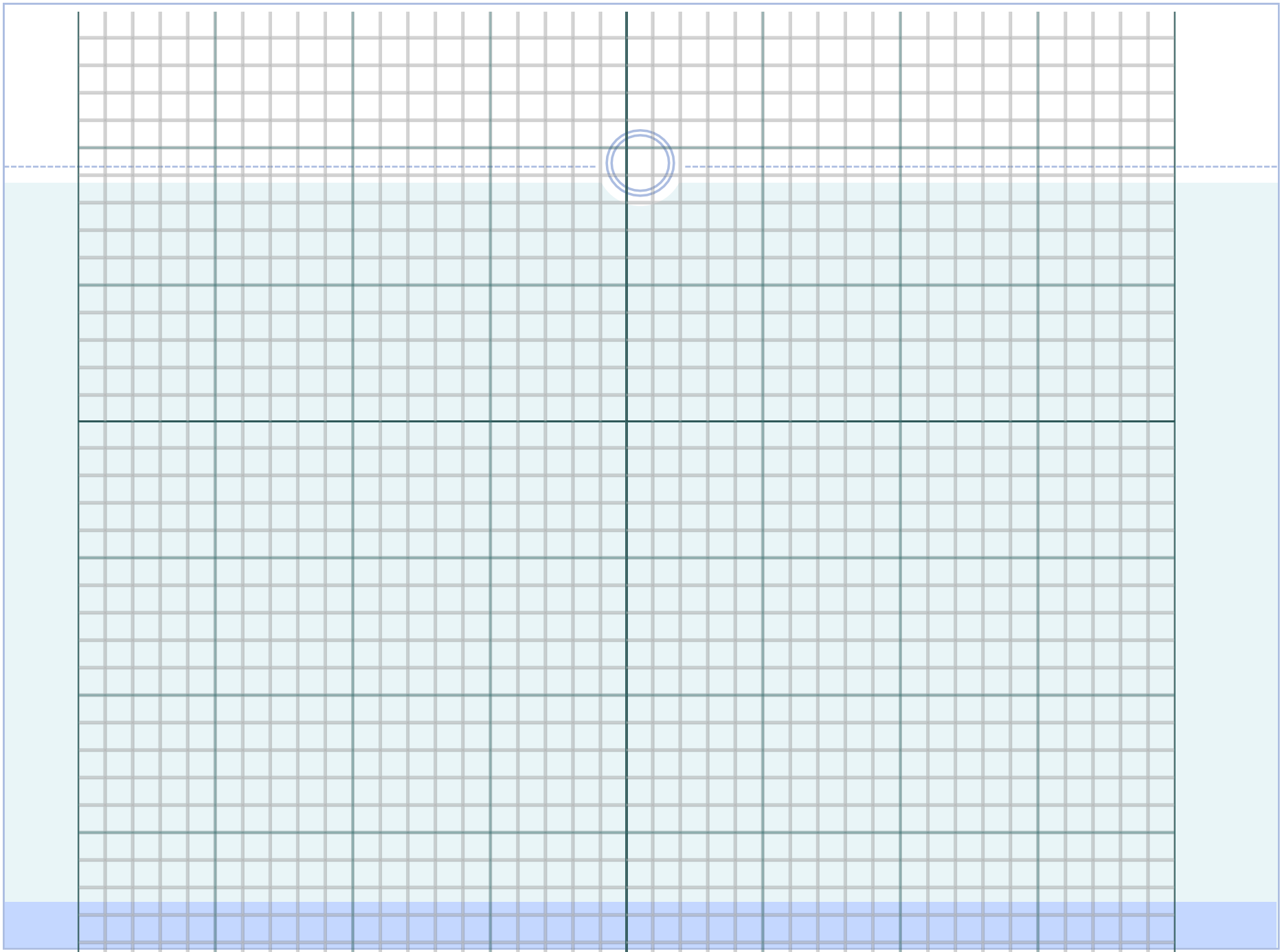
-Be able to find the slope of a line on a graph! -

Which roof is steeper???

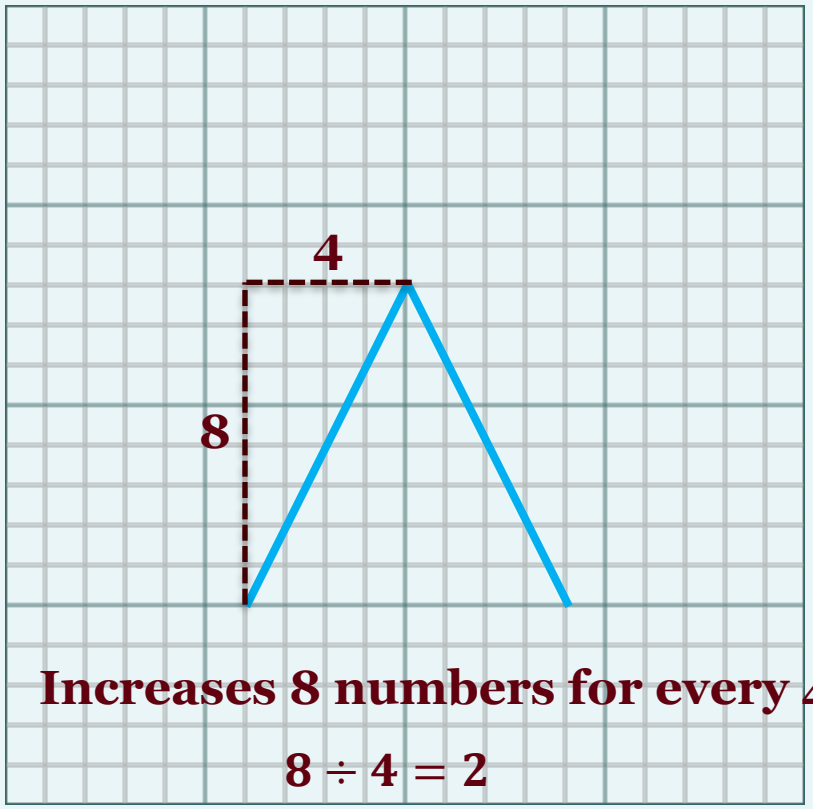
Which roof is steeper?







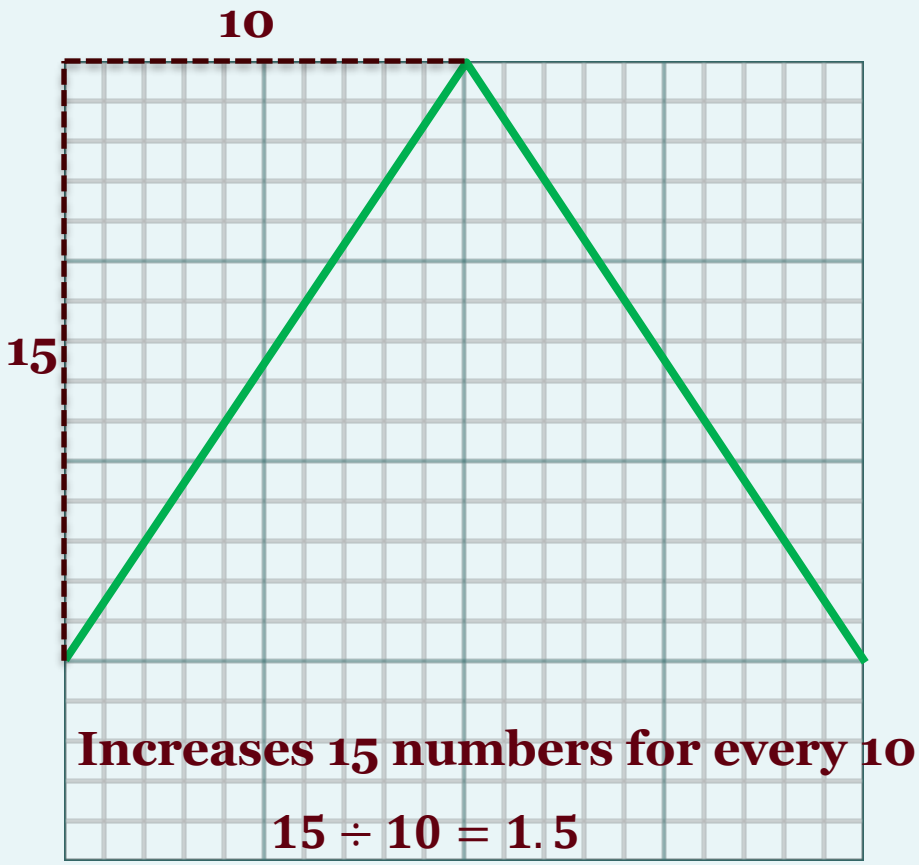
Which roof is steeper?



Increases 8 numbers for every 4

8 ÷ 4 = 2

Increases 2 numbers for every 1



Increases 15 numbers for every 10

15 ÷ 10 = 1.5

Increases 1.5 numbers for every 1

- **SLOPE describes how steep a line is.**
- **It tells you how much the graph increases for each x.**
- **Bigger slope number = steeper line!**
- **A straight line will NEVER CHANGE SLOPE!!!**

Linear Functions

- have a constant rate of change (the rate of change is the same on every interval)
  - This constant rate of change is called slope

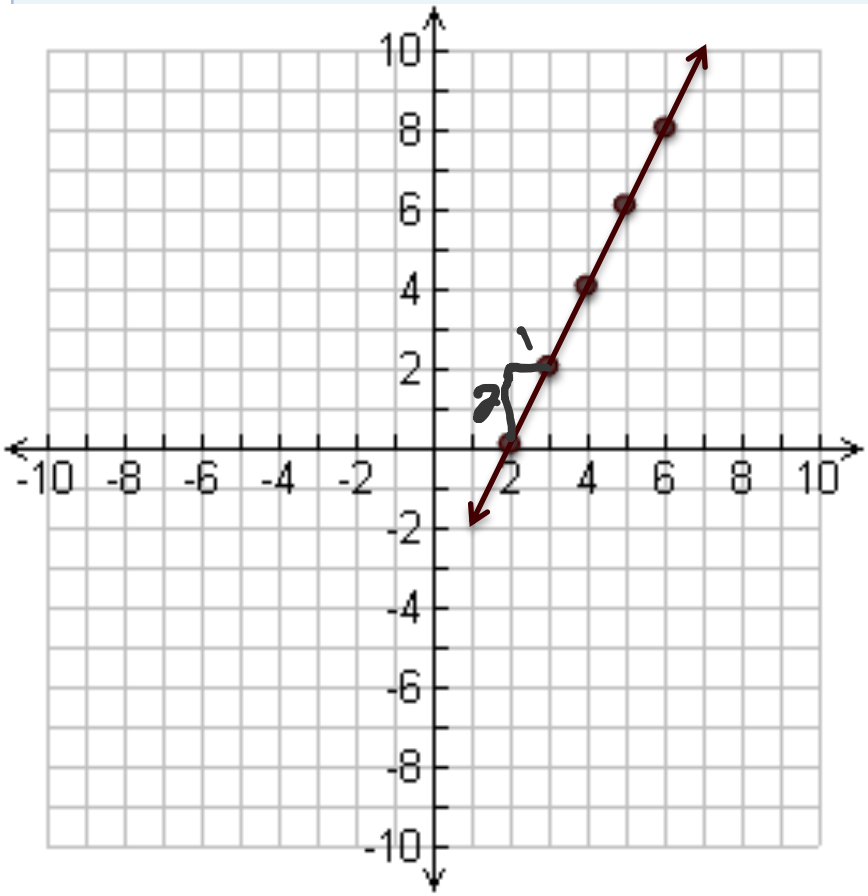
How to find Slope from a Graph:

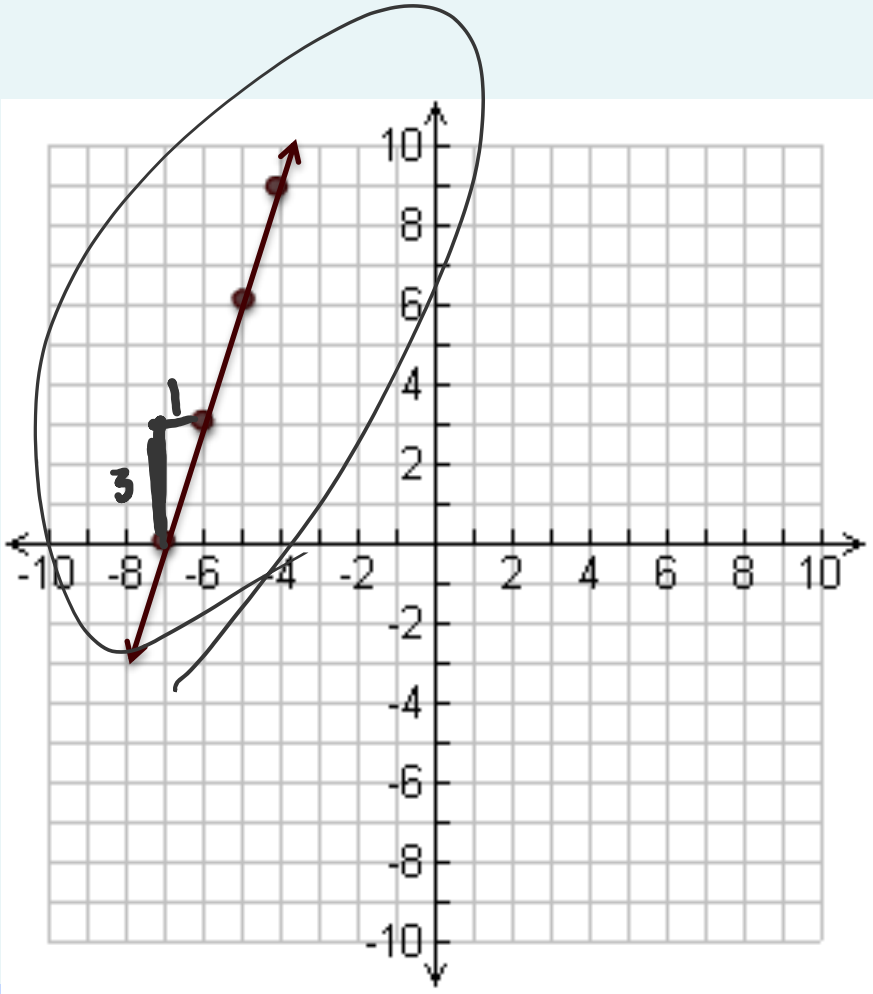
Pick two points, then find the:

- $\frac{change\ in\ y}{change\ in\ x}$

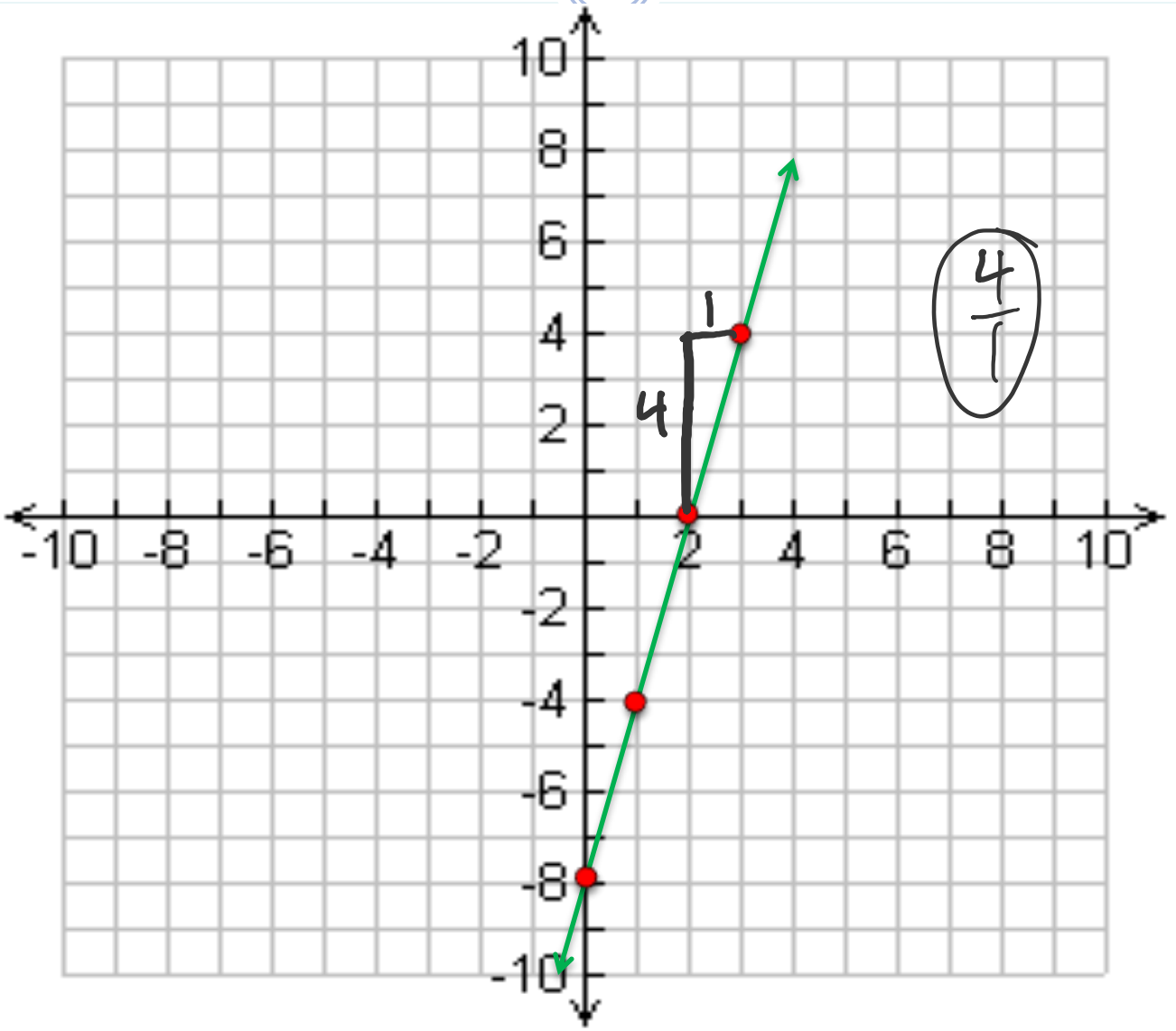
- (Also known as $\frac{rise}{run}$)

Which line is steeper?

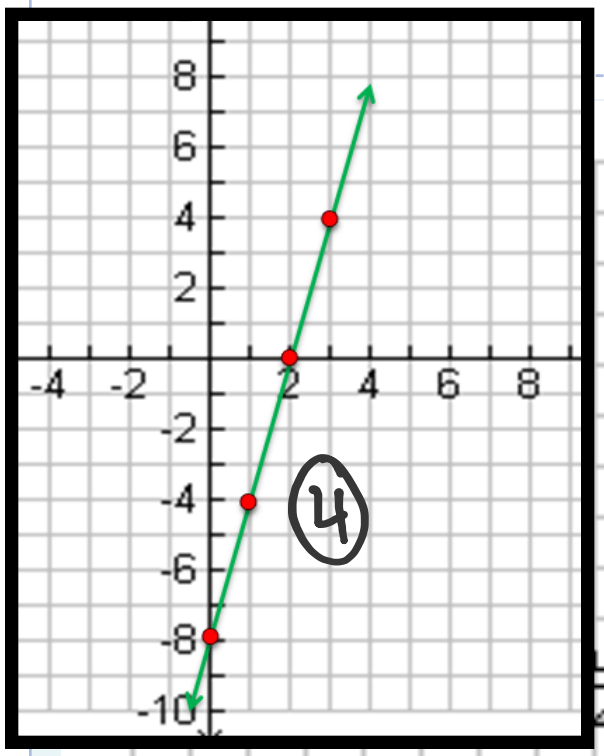


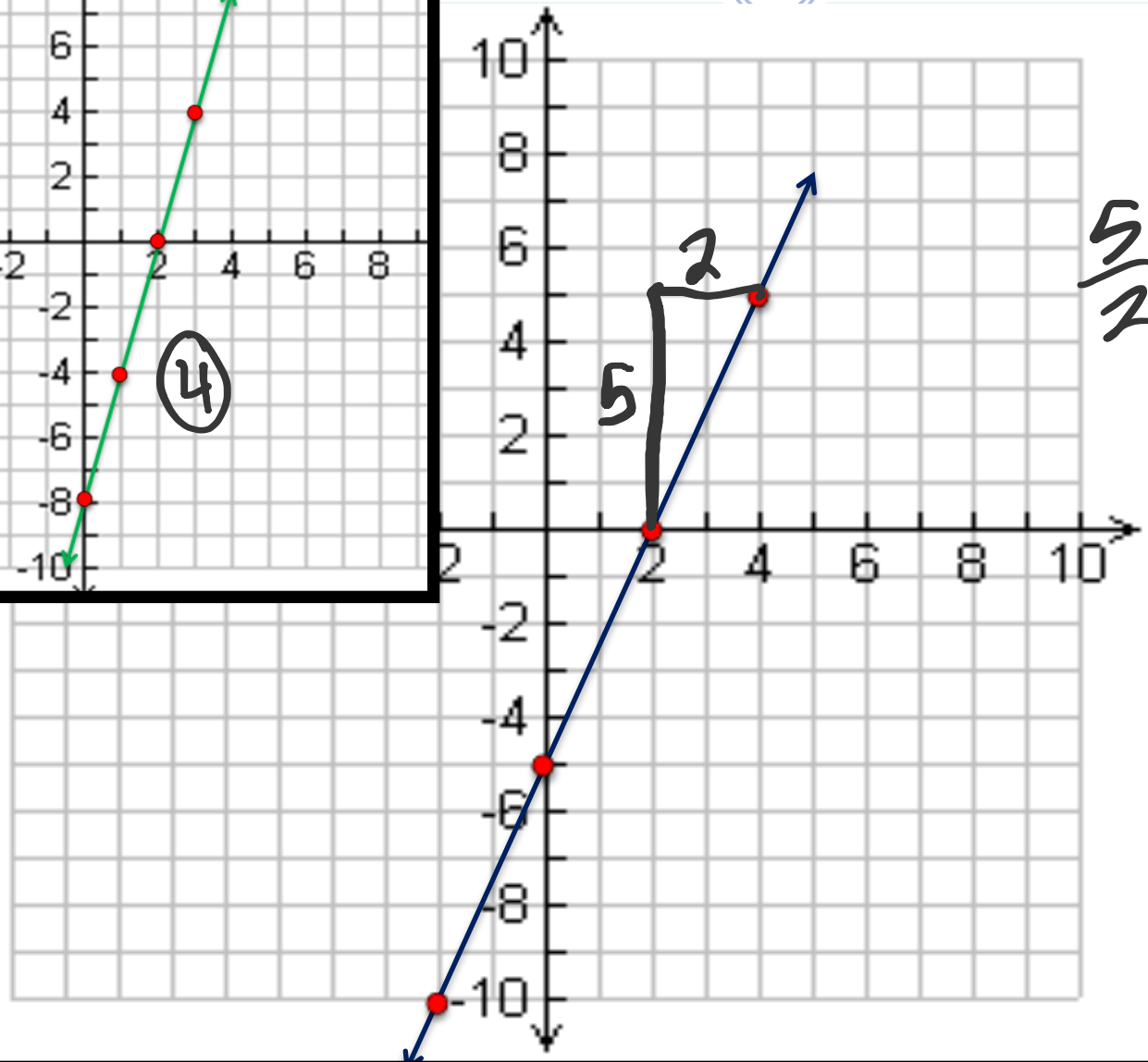


How steep is this line?



How steep is this line?

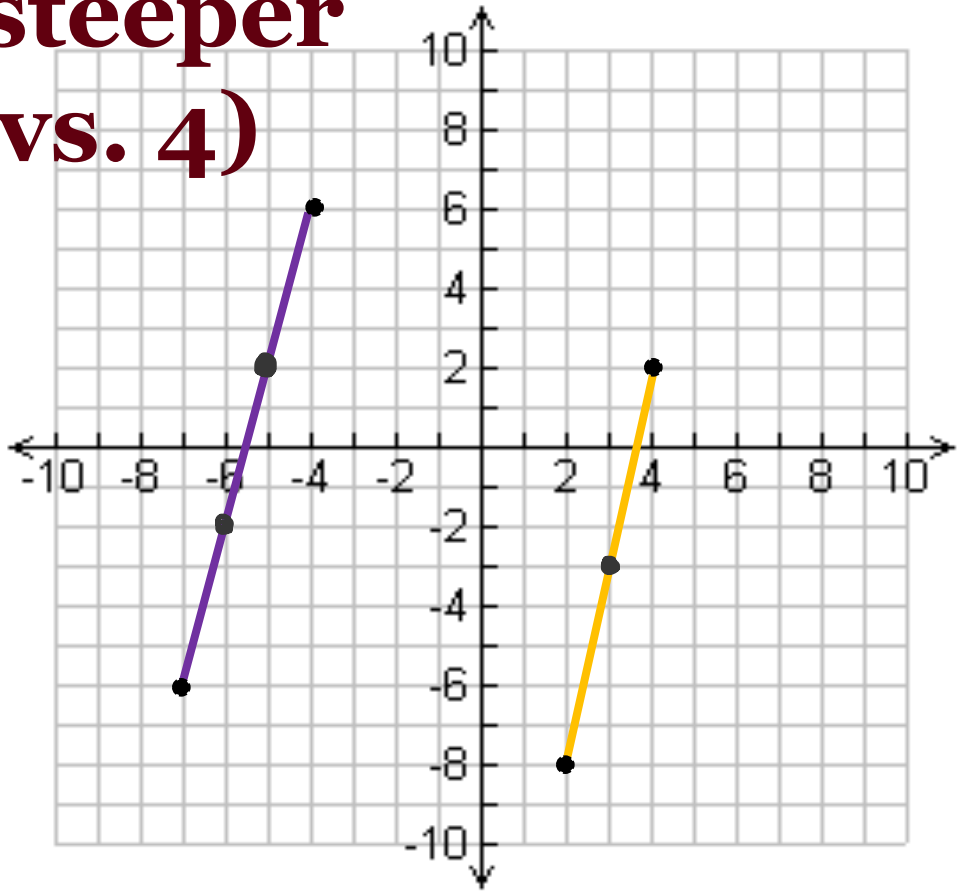




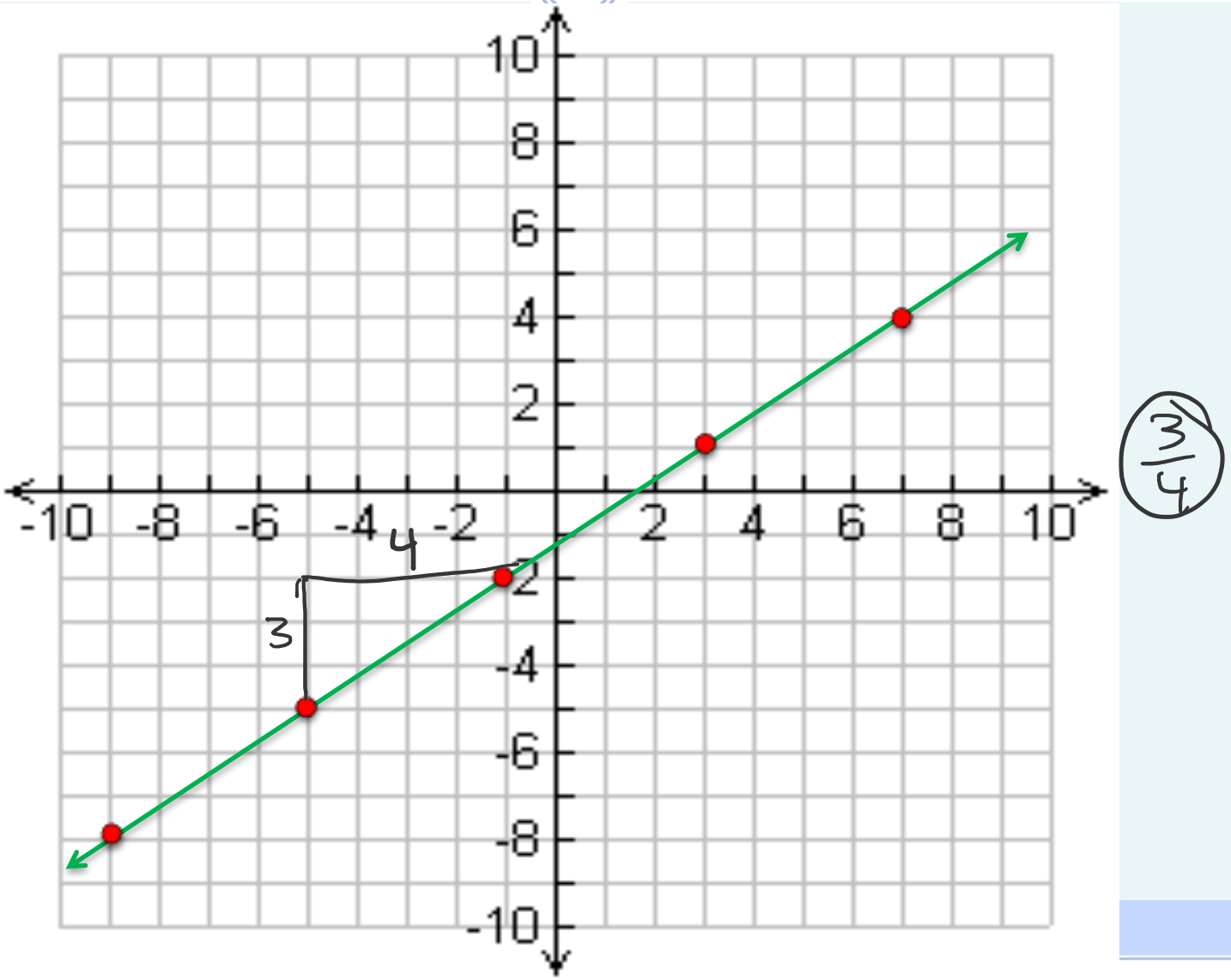
$\frac{5}{2} = 2.5$

Which line is steeper?

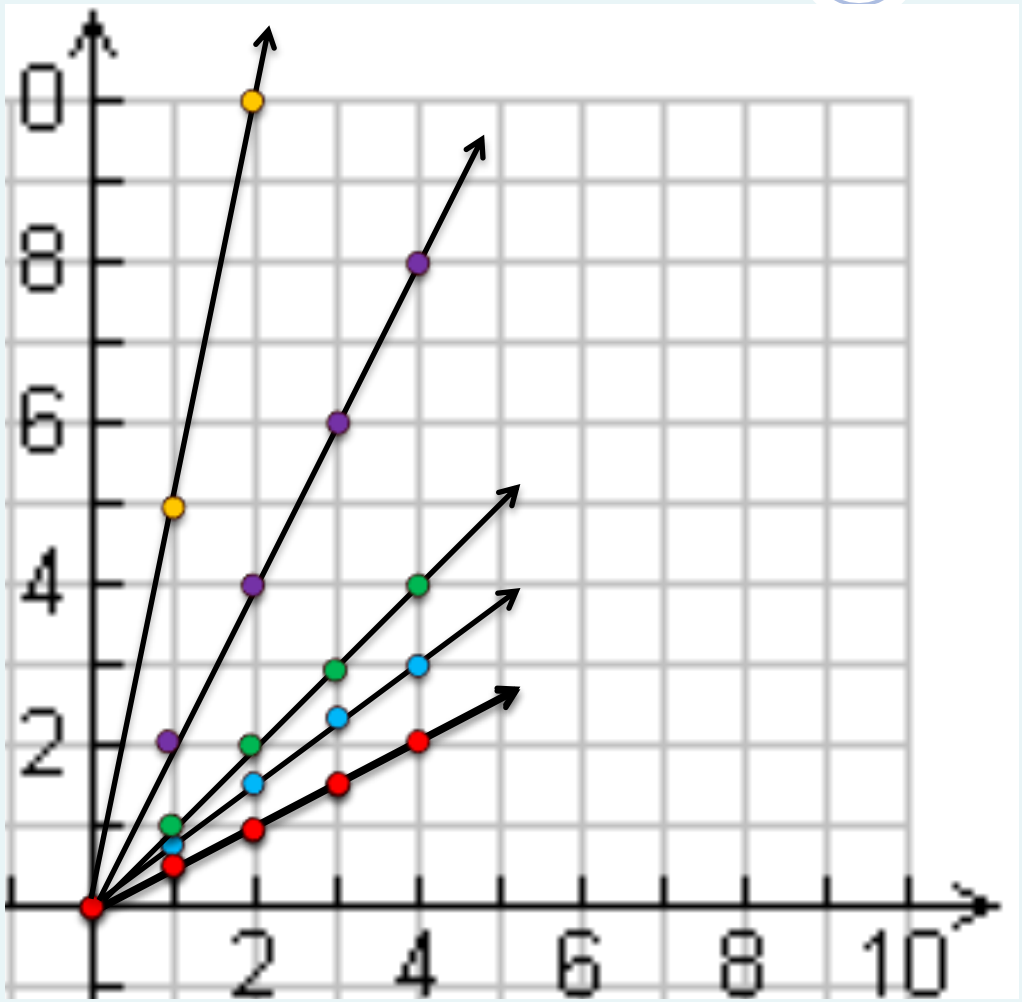
Yellow line is steeper (5 vs. 4)



How steep is this line?

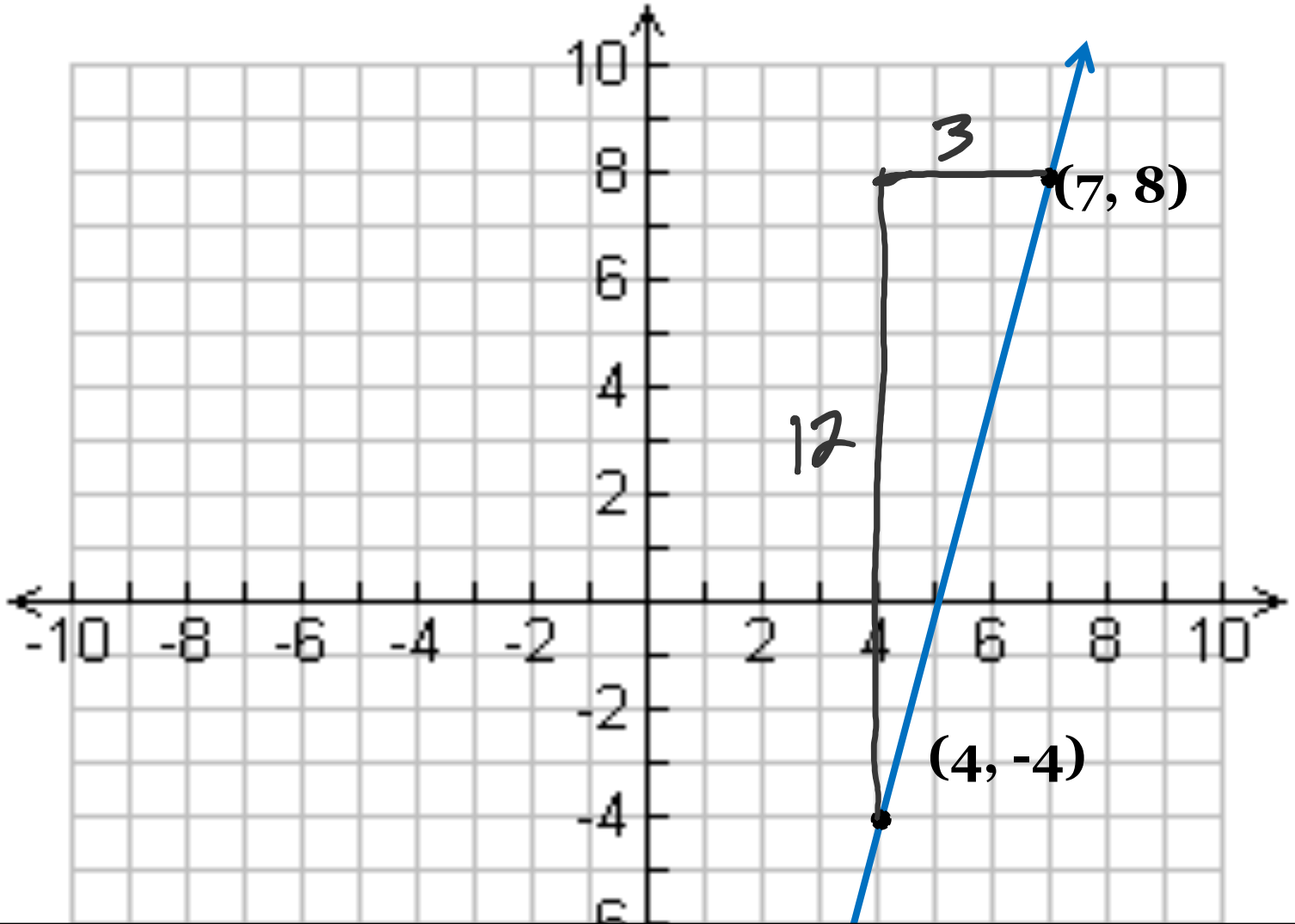


How steep is each line?

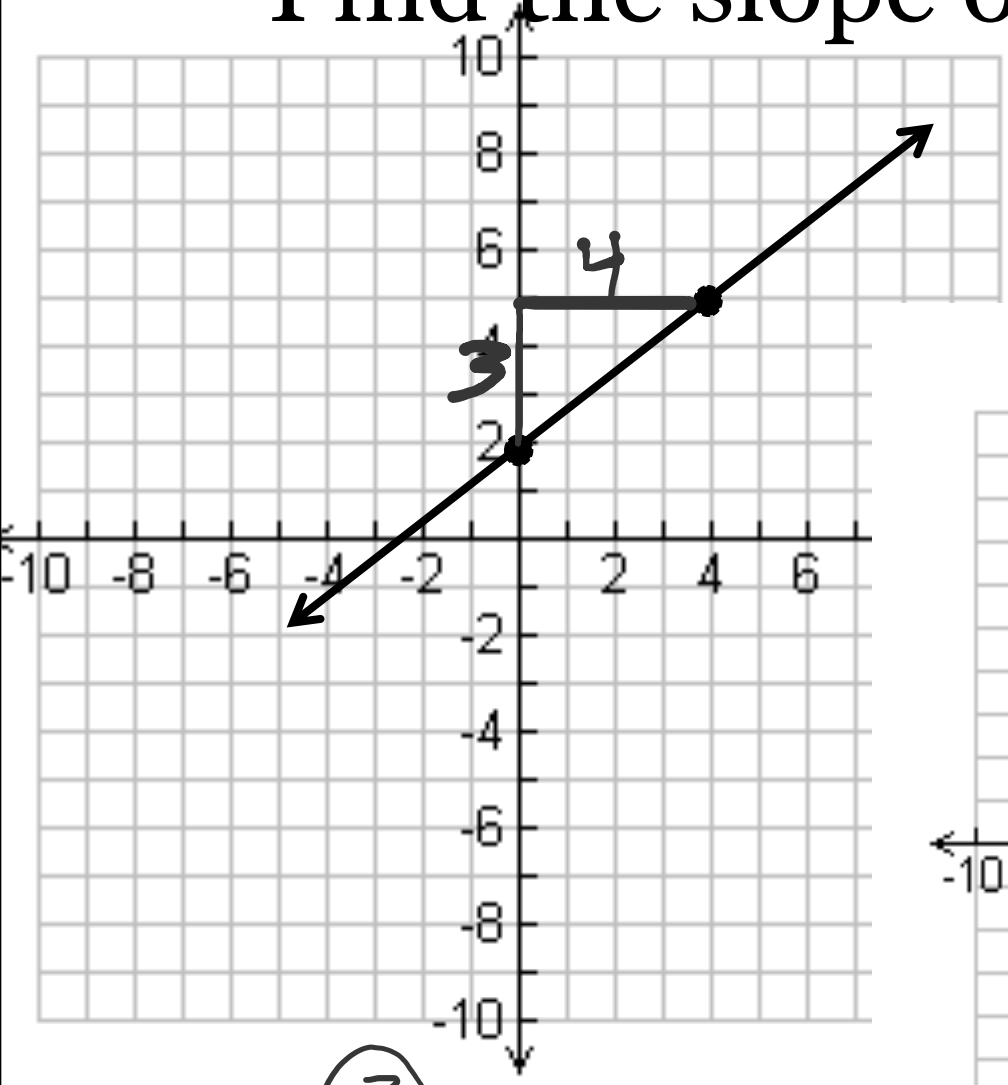


Find the slope…

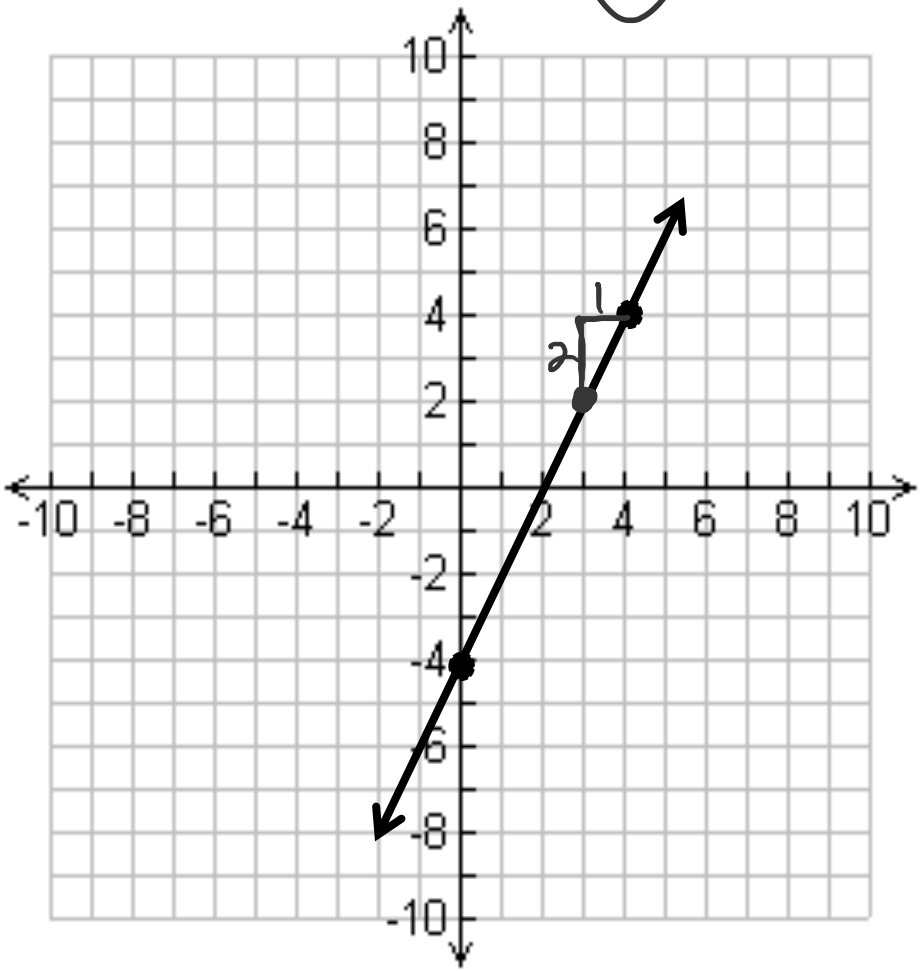
$\frac{12}{3} = 4$



Find the slope of each line...

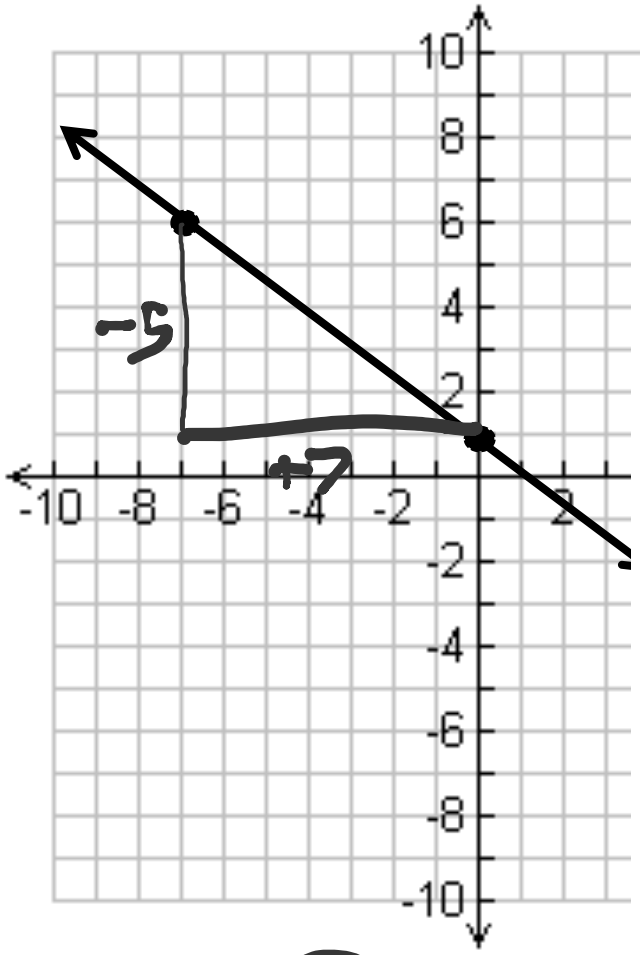


$\frac{3}{4}$



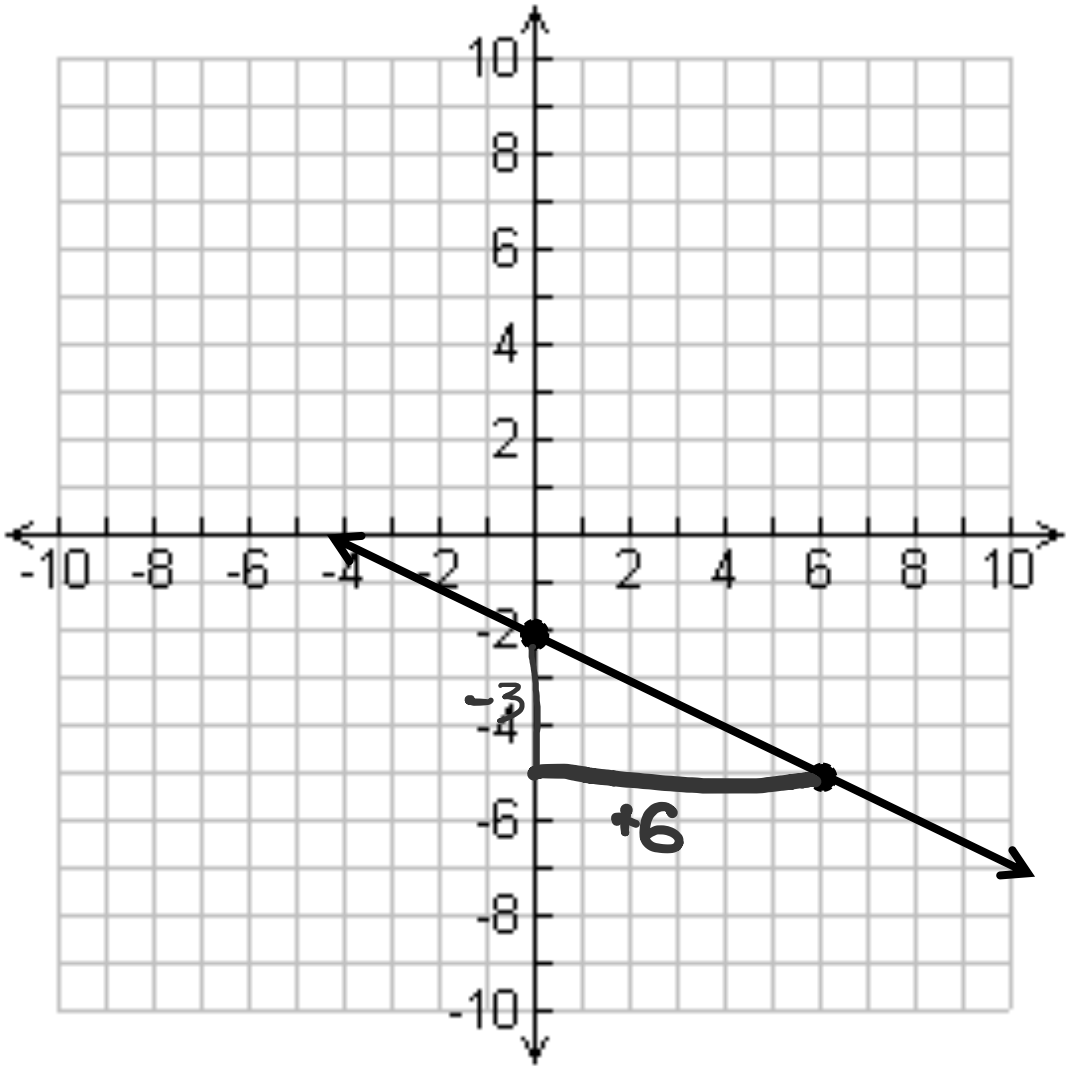
$\frac{2}{1}$

Find the slope of each line...



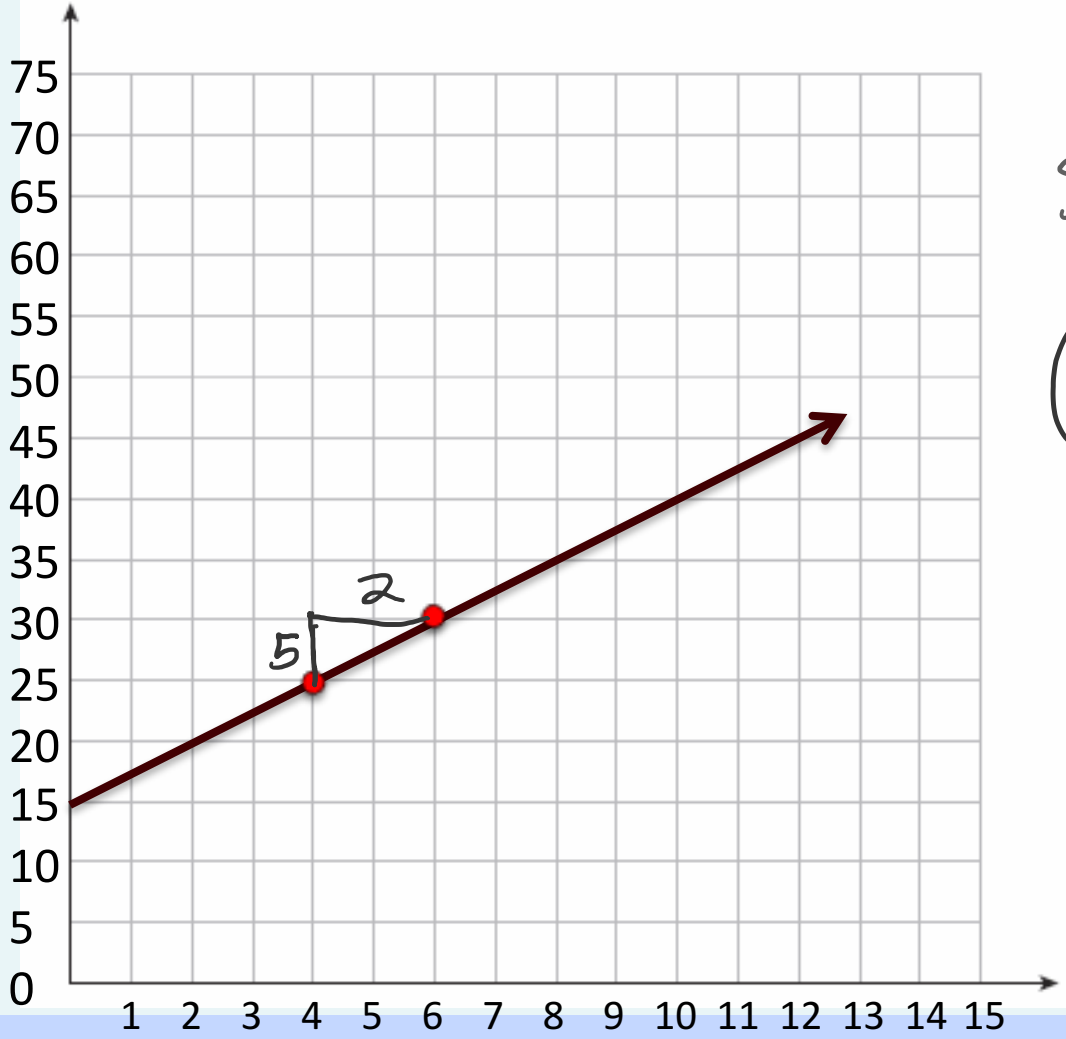
$\frac{-5}{+7} = -\frac{5}{7}$

$\frac{-3}{+6} = -\frac{1}{2}$



Find the slope:

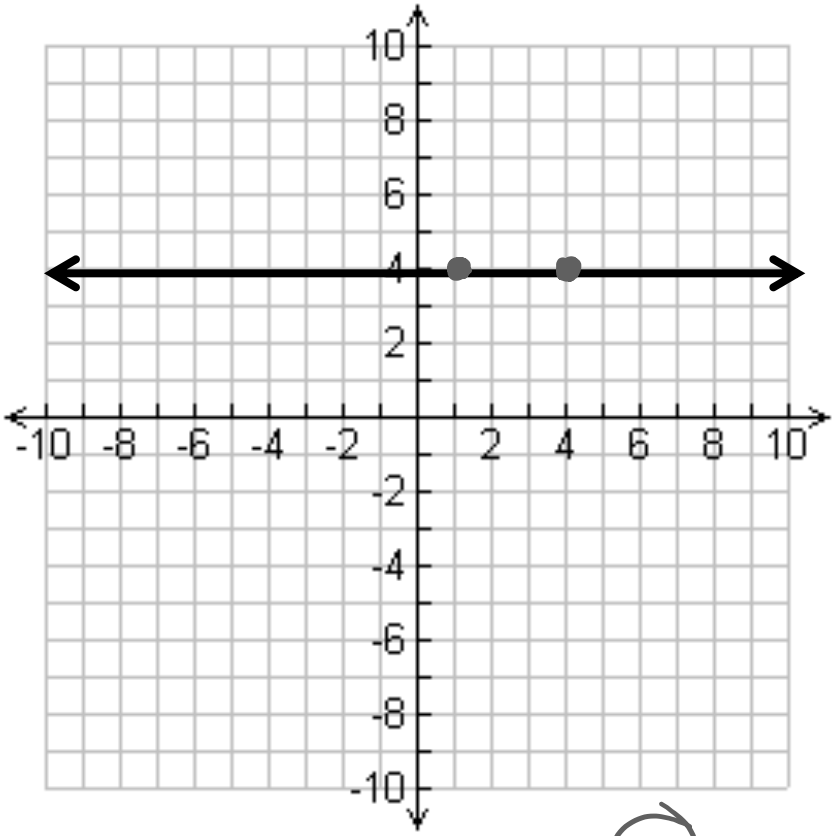
SCALED BY 5's!



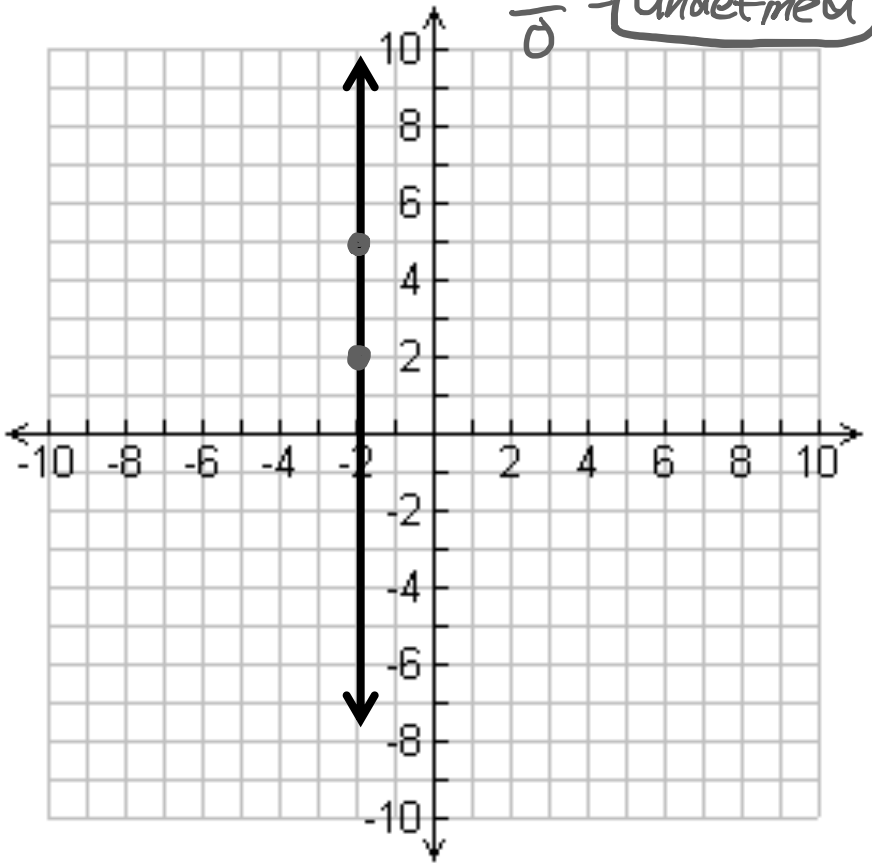
Slope = $\frac{5}{2}$

(NOT $\frac{1}{2}$)

Find the slope of each line…

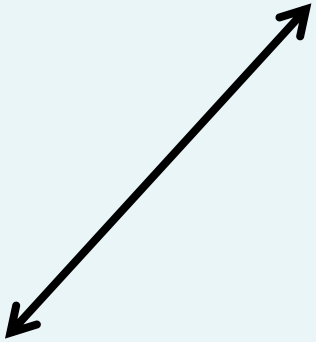


$\frac{0}{3} = 0$

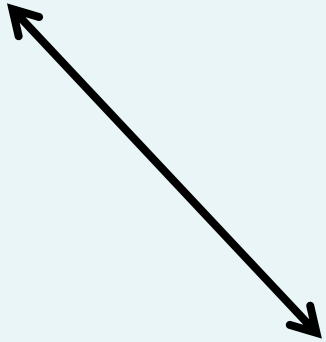


$\frac{3}{0}$ = undefined

Positive



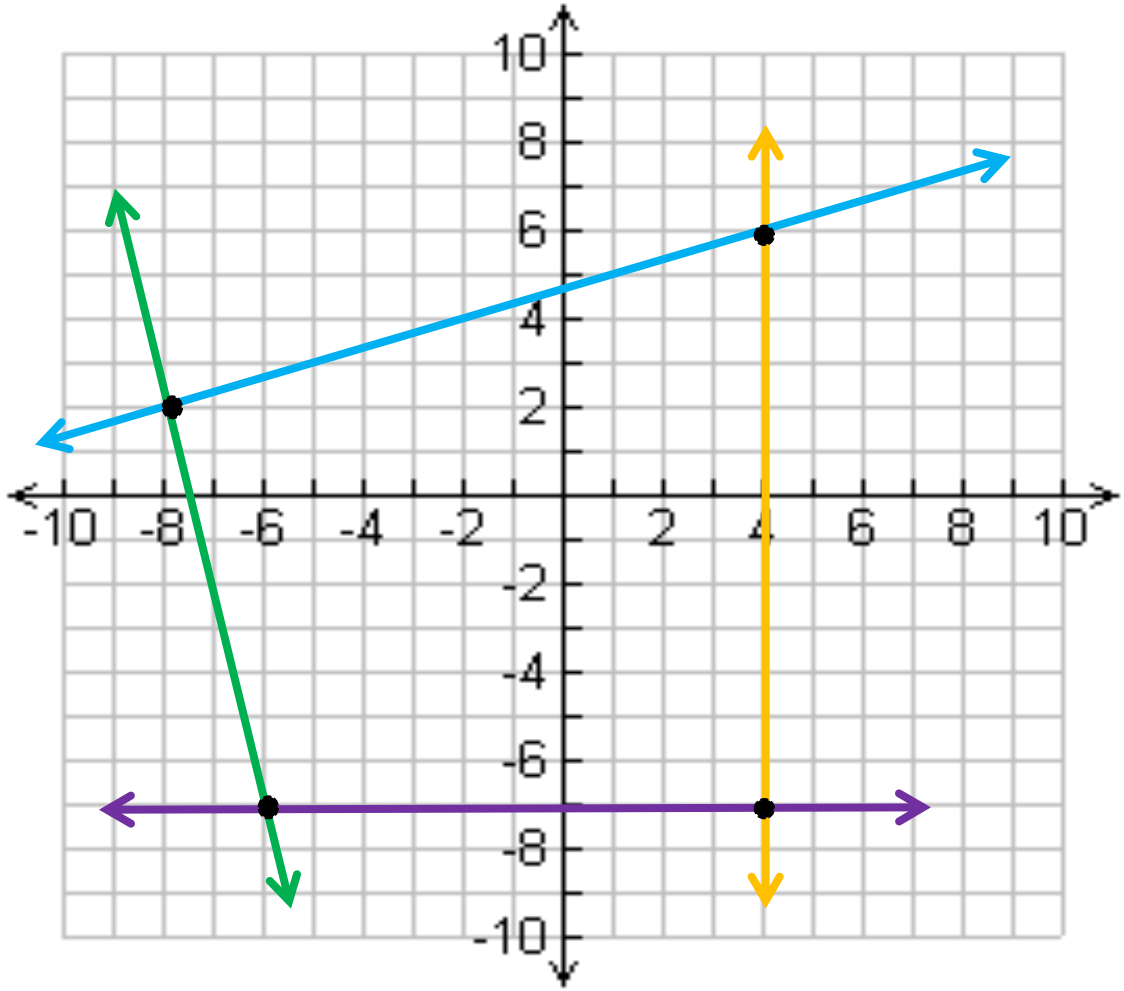
Negative



Zero

Undefined

- Find the slope of each line.



Blue slope = $\frac{1}{3}$

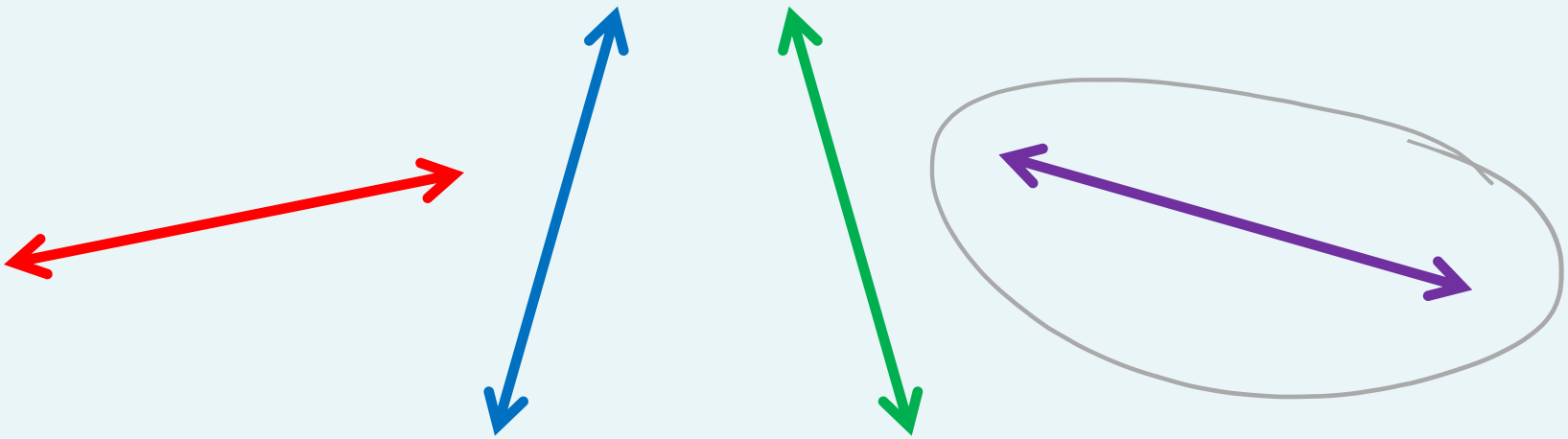
Green slope = $-\frac{9}{2}$

Purple slope = $\frac{0}{10} = 0$

Yellow slope = $\frac{13}{0}$ = UNDEFINED!!!

Which one of these lines could it be?

$$\boldsymbol{Slope} = -\frac{\mathbf{1}}{\mathbf{4}}$$



Homework

- Worksheet