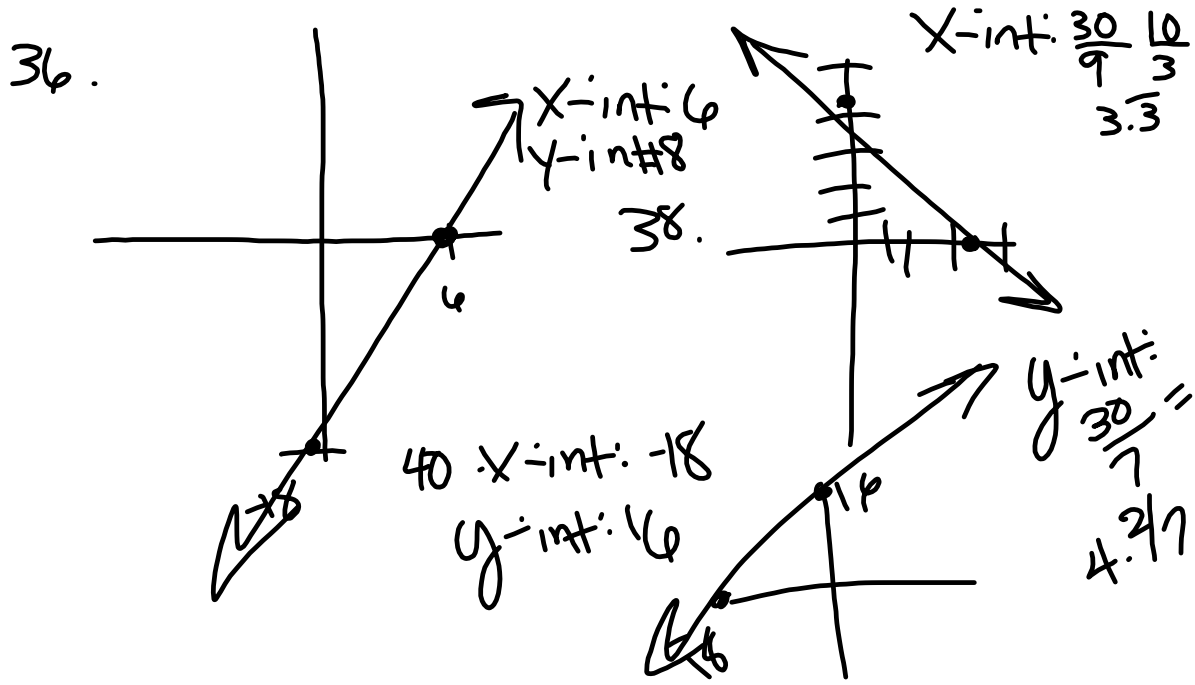
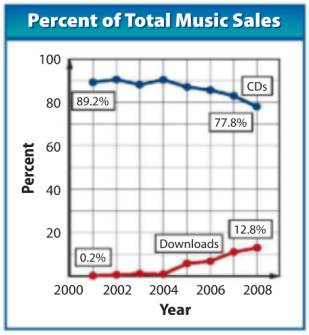


$L(m) = 1.5 + 2m$

2-3 Slope & Rate of Change

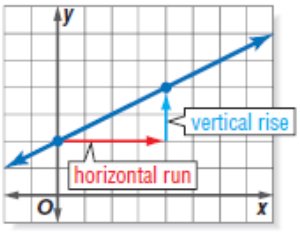


Rate of Change

- an average change over time
- not always constant

Slope of a line

- ***constant*** rate of change
- rise over run
- Δ in y over the Δ in x
- measures the steepness of a line



Slope Formula

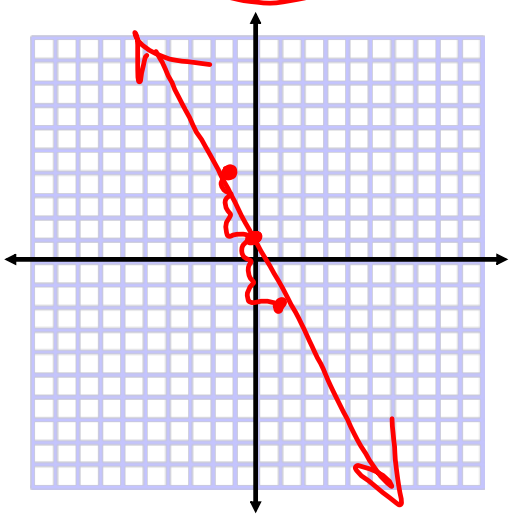
- when given two points (x_1, y_1) and (x_2, y_2) on a line, ***slope m***, can be found by the formula:

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

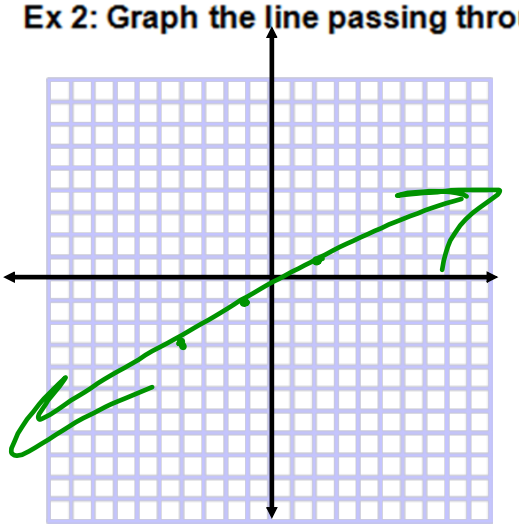
Ex 1: Find the slope of the line that passes through (-1, 4) and (1, -2). Then graph the line.

$m = \frac{4-2}{-1-1} = \frac{6}{-2} = \frac{-3\downarrow}{1\rightarrow}$

$\frac{3\uparrow}{1\leftarrow}$



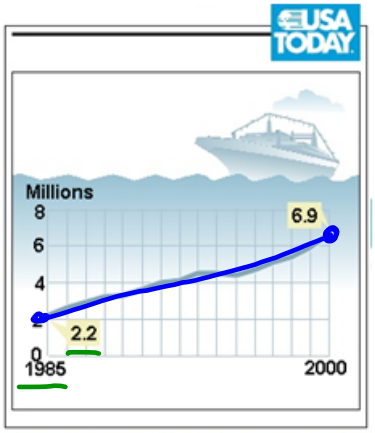
Ex 2: Graph the line passing through (-4, -3) with $m = \frac{2}{3}$.



$\frac{\uparrow 2}{\rightarrow 3} = \frac{\downarrow 2}{\leftarrow 3}$

$\frac{-2}{-3}$

Ex 3: Refer to the graph at the right. Find the rate of change of the number of people taking cruises from 1985 to 2000.



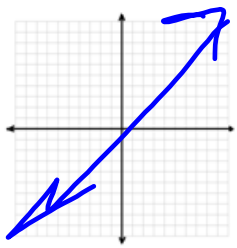
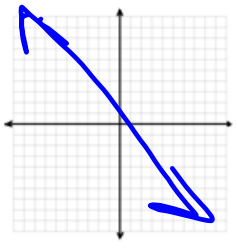
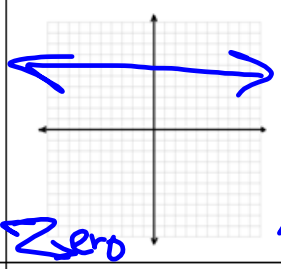
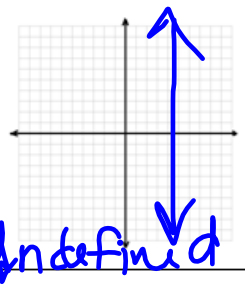
(1985, 2.2) (2000, 6.9)

$m = \frac{6.9 - 2.2}{2000 - 1985} = \frac{4.7}{15} \approx .313$ million/year

1985 2.2

2000 6.9

Concept Summary:

Positive	Negative	Zero	Undefined
		 Zero	 Undefined
rises to the right	falls to the right	$m = \frac{0}{\#} = 0$ $m = \frac{\text{rises}}{\text{run}}$	$m = \frac{\#}{0}$ $m = \frac{\text{rises}}{\text{no run}}$

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