1A - BE MONDAY 1-17-11

SOLVE:

① $-3(x+2) = 8$

② $\frac{5}{12} = \frac{x}{8}$

③ $7x + 4 = 2x - 9$

Simplify:

④ $3 + \frac{4}{7}$

⑤ $6-(-8) \div 2 + 3 + 1$

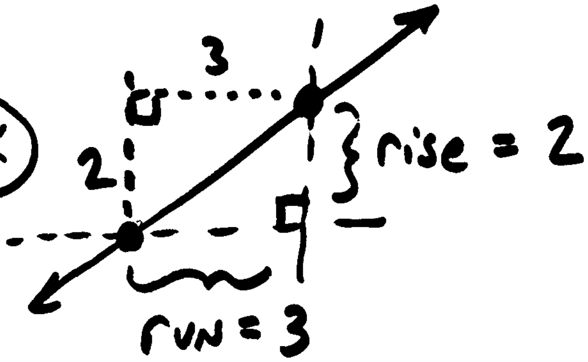
Basic Property of Any line:

slope A Number that measures how "steep" a line is, it is the ratio of rise over run.

$$\frac{\text{rise}}{\text{run}} = \text{slope} = m$$

use m in the US for slope, historical reasons.

Ex

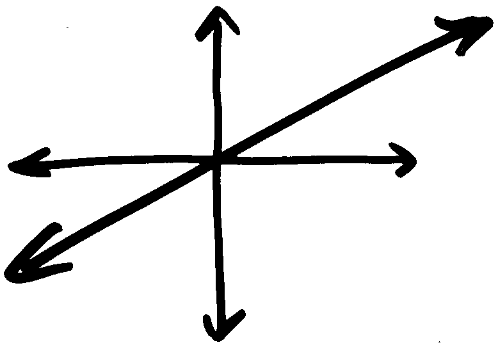


$$\text{slope} = \frac{2}{3} = m$$

$$\text{slope} = \frac{2}{3} = m$$

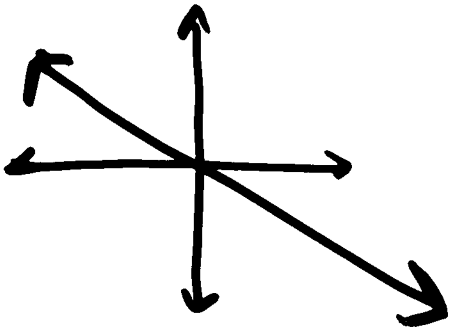
- use <u>any</u> two points <u>on</u> the line
- draw horizontal ↔ or vertical ↕ line through one point and the other kind through the second to get "slope triangle"
- measure rise and run to get m

Basic Slope Values:



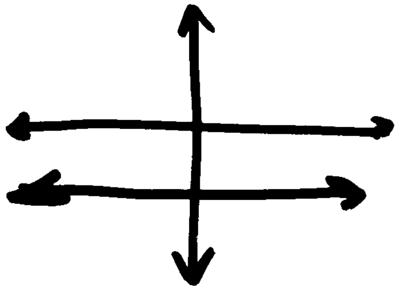
Positive Slope

Ex $m = 2$ or $\frac{2}{1}$



Negative Slope

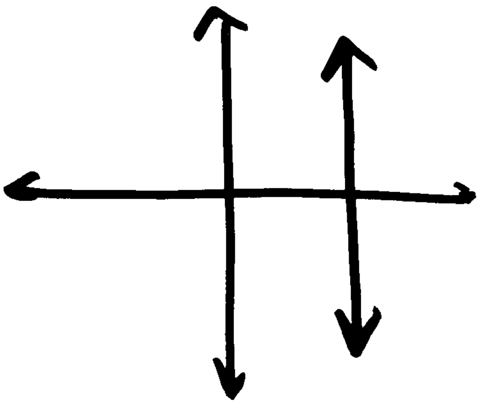
Ex $m = -2$ or $-\frac{2}{1}$



0 = slope

$\frac{\text{rise}}{\text{run}} = \frac{0}{\text{run}} = 0$

Division
By
Zero
is
Undefined



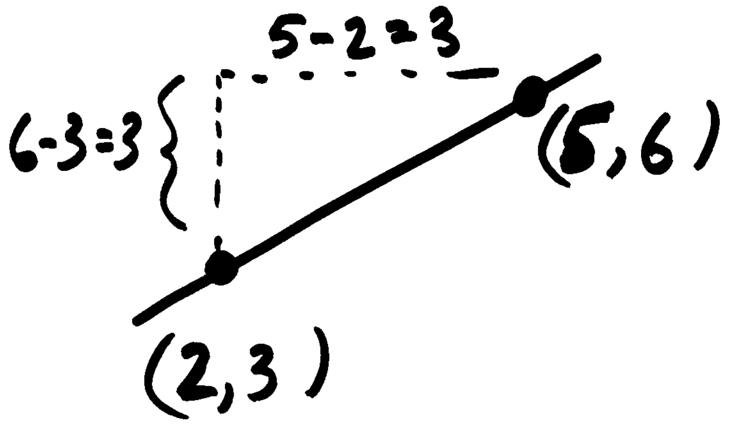
Undefine = slope

$\frac{\text{rise}}{\text{run}}$ · ∅

$\text{run} = 0$

If you know the (x,y) values for 2 points, you can find its slope using a formula.

Since y is ↕, the "change" in y values of any 2 points is the rise



$$m = \frac{3}{3} = 1 = \frac{\text{rise}}{\text{run}}$$

Since x is ↔, the "change" in x values of any two points is the run

You can call any two points

$(x_1, y_1), (x_2, y_2)$ and $\boxed{m = \frac{y_2 - y_1}{x_2 - x_1}} = \frac{\text{rise}}{\text{run}}$

How to find slope:

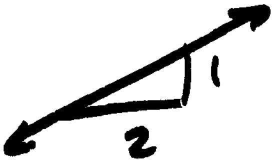
Ex Find slope of line through (1, 4) and (3, 5)

$y_2 - y_1$

$(1, 4), (3, 5)$

$x_2 - x_1$

$$m = \frac{5-4}{3-1} = \boxed{\frac{1}{2} = m}$$



Ex Find slope of line through (3, -2), (5, -6)

$(3, -2), (5, -6)$

$$\frac{-6 \overset{+}{-(-}2)}{5-3} = \frac{-4}{2} = \boxed{-2 = m}$$

Remember: $\frac{0}{\text{ANYTHING}} = 0 = m$ = horizontal LINE

$$\frac{\text{ANYTHING}}{0} = \underset{\substack{\shortparallel \\ m}}{\text{UNDEFINED}} = \text{VERTICAL LINE}$$

Your turn: find m

Ex $(-1, 2), (3, 4)$

Ex $(-1, -2), (-4, 1)$

Ex $(1, 2), (-1, 2)$

Ex $(1, -2), (1, 3)$

↑ These are Ex 1 to 4 on Pg 257

- Homework:
  - Read Ch 5-1
  - Pg 259 # 1 to 10.