

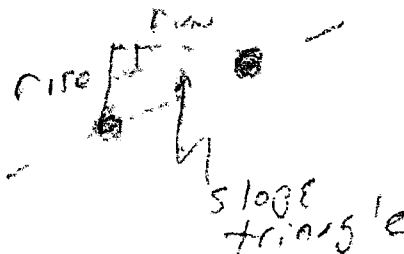
Geometry - Class Notes

Monday 9-10-12

Ch. 3-5 Slope "m"


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

OR

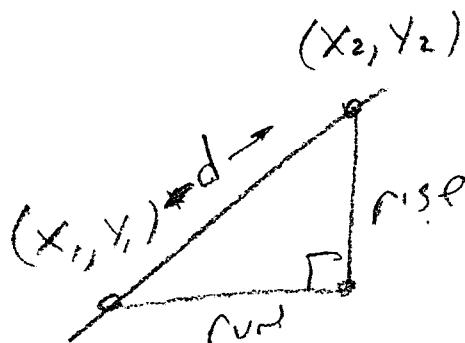


$\frac{0 = \text{rise}}{\text{run}}$
 $m = 0$

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

$m = \text{UNDEFINED}$

DIVISION BY 0 IS UNDEFINED

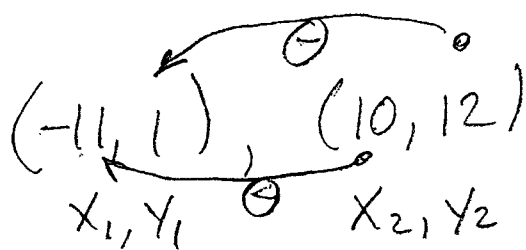


$(x_1, y_1), (x_2, y_2) = \frac{\text{rise}}{\text{run}}$

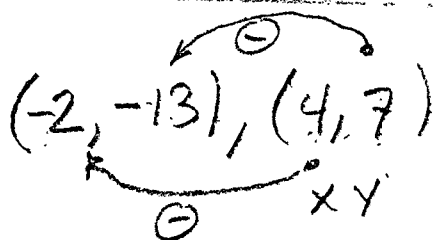
$m = \frac{y_2 - y_1}{x_2 - x_1}$

$d = \sqrt{\text{rise}^2 + \text{run}^2}$

Ch. 3-6 Lines in the X-Y Coordinate Plane



$$\frac{\text{rise}}{\text{run}} = \frac{12-1}{10-(-11)} = \frac{11}{21} = m$$



$$\frac{7+13}{4+2} = \frac{20}{6} = \frac{10}{3} = m$$

$$y = mx + b$$

$$\begin{array}{r|l} x/y & \\ \hline 0 & b \end{array}$$

$$7 = \frac{10}{3} \left(\frac{4}{1} \right) + b$$

$$\frac{21}{3} = \frac{40}{3} + b$$

$$-\frac{40}{3} \quad -\frac{40}{3}$$

$$-\frac{19}{3} = b$$

$$y = mx + b$$

$$y = \frac{10}{3}x - \frac{19}{3}$$

↓
6 $\frac{1}{3}$

$$y' = mx' + b$$

$$y = f(x) = m + b$$

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

$$m = \frac{y - y_1}{(x - x_1)}$$

$$m(x - x_1) = y - y_1$$

ⓧ

$$m = 2$$

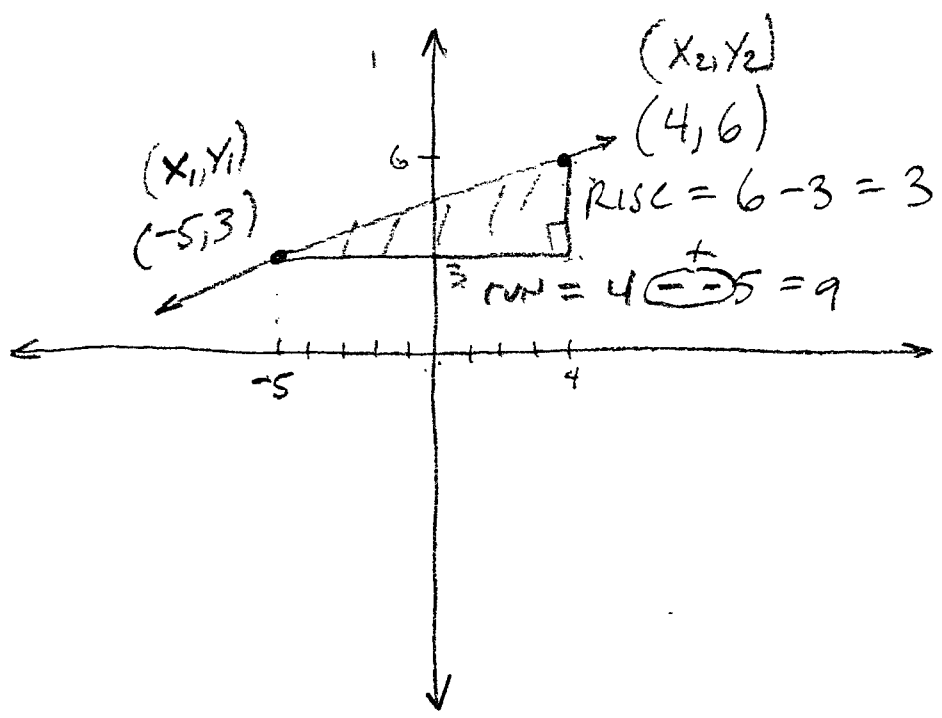
$$P(4, 3)$$

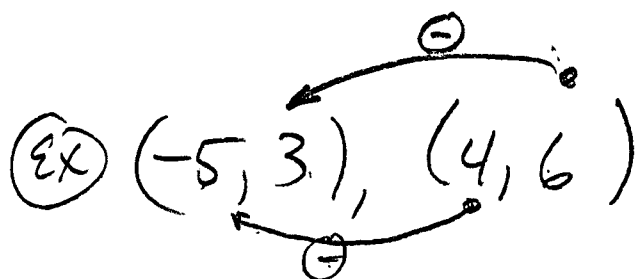
$$(x_1, y_1)$$

$$2(x - 4) = y - 3$$

↑ ↑ ↗
m POINT

POINT-SLOPE Form



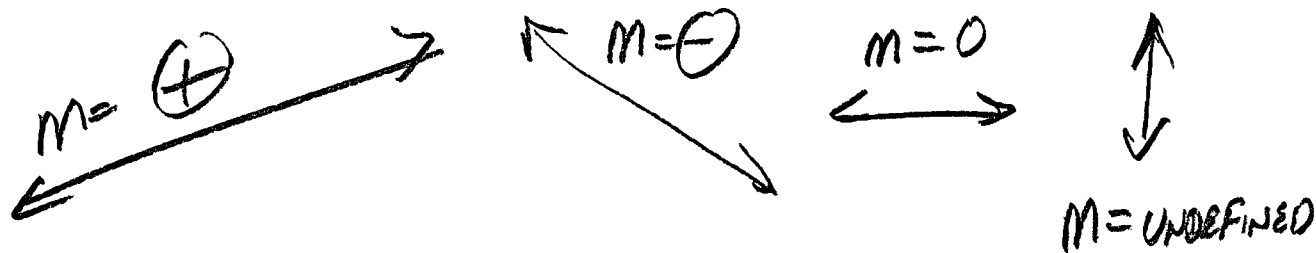


$$\frac{\text{Rise}}{\text{run}} = \frac{6-3}{4-(-5)} = \frac{3}{9} = \frac{1}{3} = m$$

EX $(4, 6), (-5, 3) = \frac{3-6}{-5-4} = \frac{-3}{-9} = \frac{1}{3}$ ✓

Q $(-2, -13), (4, 7) = \frac{7+13}{4+2} = \frac{20}{6}$

$$m = \frac{10}{3}$$



Ex EOL in S-I Form

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

θ

$\swarrow$

$\nwarrow$

x, y

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

$$y = mx + b$$

$$4 = (1)(3) + b$$

$$4 = 3 + b$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

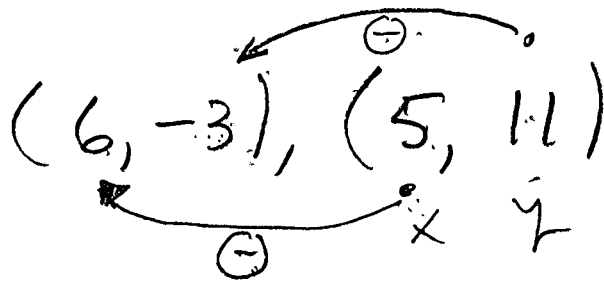
$$1 = b$$

$$y = mx + b$$

$$y = 1x + 1$$

$$y = x + 1$$

Ex



$$\frac{11 + 3}{5 - 6} = \frac{14}{-1} = -14 = m$$

$$y = mx + b$$

$$11 = (-14)(5) + b$$

$$11 = -70 + b$$

$$81 = b$$

$$y = mx + b$$

$$y = -14x + 81$$

Slope-Intercept
Form

$$m = -14$$

$$(0, 81) = (0, b)$$

$$\textcircled{6} \quad -\frac{4}{5}x = 2 + \frac{2}{5}y$$

$$\frac{5}{2} \cdot \frac{2}{5}y = \left(-\frac{4}{5}x - 2\right) \frac{5}{2}$$

$$y = -2x - 5$$

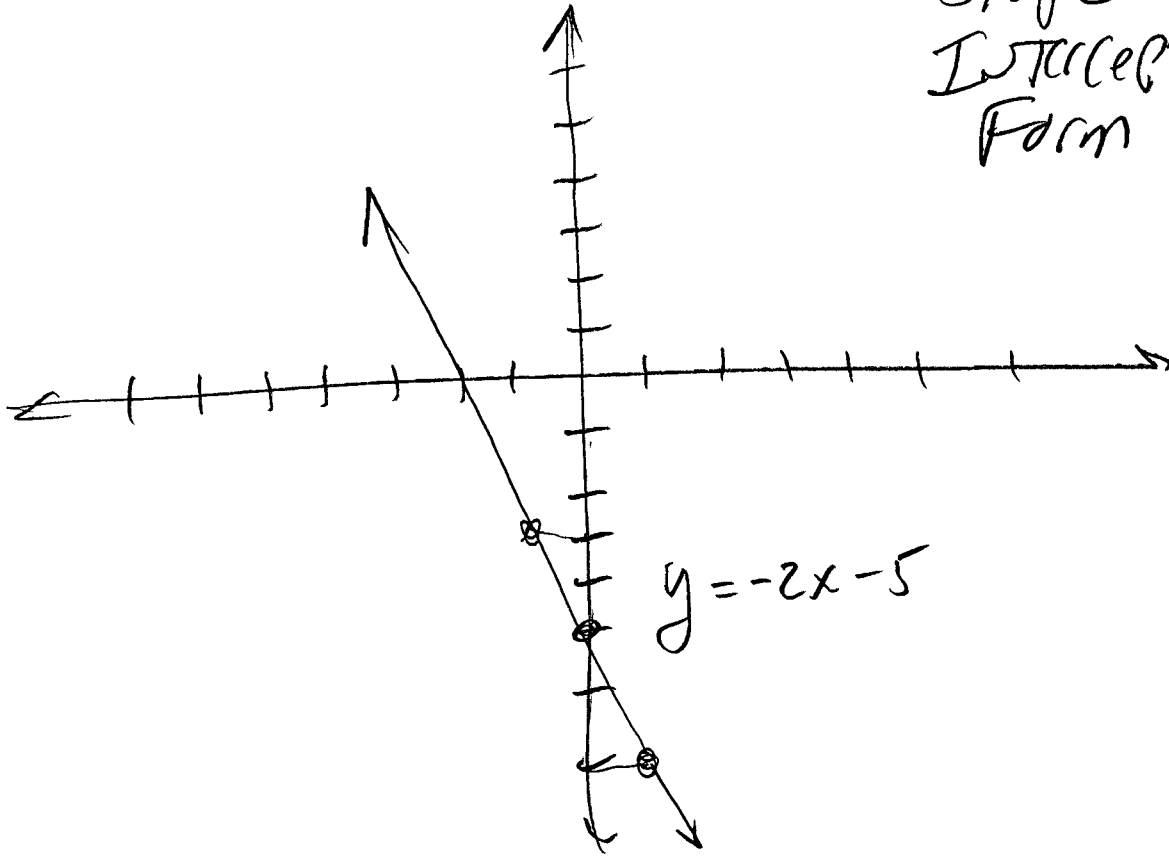
$$\begin{matrix} * & (1, -7) \\ & (17, -39) \end{matrix}$$

$$y = mx + b$$

move b to
SLOPE

begin

SLOPE
INTERCEPT
Form



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

START WITH

$$m = \frac{(y - y_1)}{(x - x_1)}$$

know (x_1, y_1)
know m

Point-Slope
Form

$$m(x - x_1) = y - y_1$$

slope

point

EX

Given
 $m = -2$ slope
 $P(1, -7)$ point

$$-2(x - 1) = y + 7$$

NOT UNIQUE

$$-2x + 2 = y + 7$$

$$-2x - 5 = y$$

Given

$m = -2$ slope
 $P(17, -39)$ point

$$-2(x - 17) = y + 39$$

$$-2x + 34 = y + 39$$

NOT UNIQUE

$$-2x - 5 = y$$