Check-Up:

$y = mx + b$ (slope, y-Intercept)

① $3x - 7y + 5 = 0$

Slope? y-Intercept?

$C = 7t - 4$ (slope, y-Int.)

$\frac{-7y}{-7} = \frac{-3x}{-7} - \frac{5}{-7}$

$y = \frac{3}{7}x + \frac{5}{7}$ (slope-y-Intercept Form)

$m = \frac{3}{7}$ $b = \frac{5}{7}$ $y = mx + b$

2

Slope - Y Intercept Form

- is of the form... $y = mx + b$, where m is the slope
  b is the y intercept
- if you are given **m** and **b**, then you can get the equation of the line.

ex: Determine the **slope** and **y-intercept** of the following line.

$$3(2y - 1) = -2(x + 5)$$

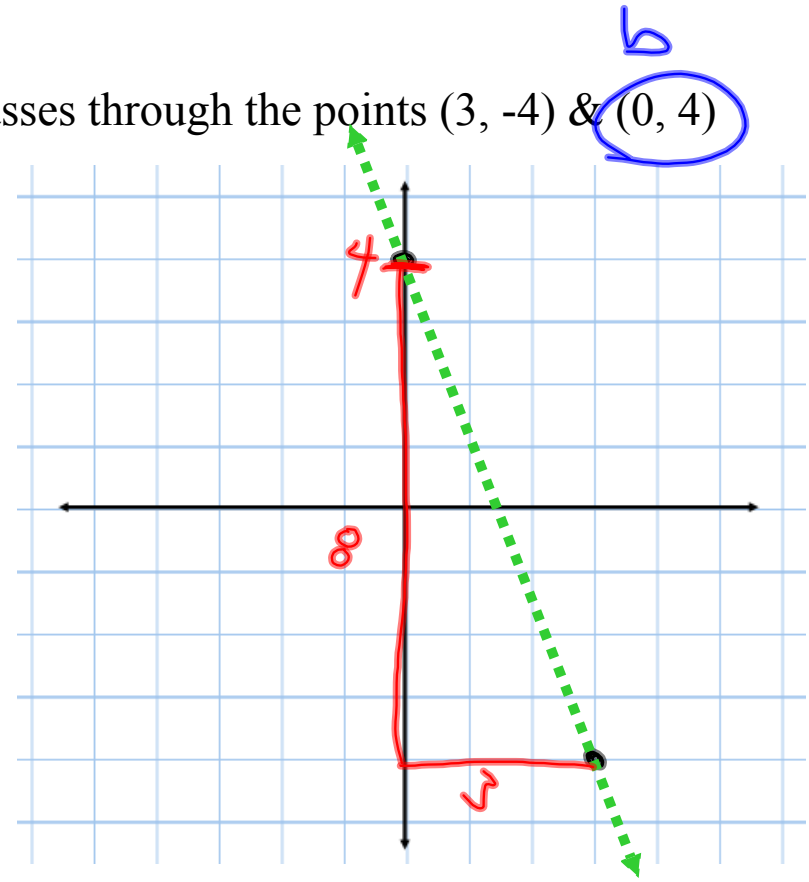
ex: sketch the line that passes through the points (3, -4) & (0, 4)

- Determine the equation of this line

$y = mx + b$ (slope, y-int)

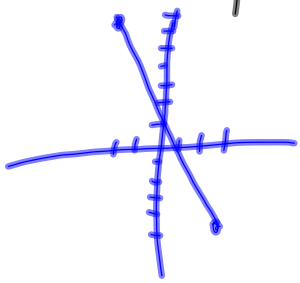
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 4}{3 - 0} = \frac{-8}{3}$

Equation: $y = -\frac{8}{3}x + 4$



① $(-2, 7)$ & $(3, -5)$ (x, y)

Find equation of line passing through these 2 points.



$y = mx + b$ ← slope

$m = \frac{12}{-5}$ } $y = -\frac{12}{5}x + b$

Represent (x, y) coordinates of any point on the line

$7 = -\frac{12}{5}(-2) + b$

$7 = \frac{24}{5} + b$

$\frac{7}{1} - \frac{24}{5} = b$

$\frac{35}{5} - \frac{24}{5} = b$

$\frac{11}{5} = b$

$-5 = -\frac{12}{5}(3) + b$

$-5 = -\frac{36}{5} + b$

$-\frac{5}{1} + \frac{36}{5} = b$

$-\frac{25}{5} + \frac{36}{5} = b$

$\frac{11}{5} = b$

Equation:

$$y = -\frac{12}{5}x + \frac{11}{5}$$

(5) $7 = \frac{(5)}{5}(-2) + b(5)$

Get Rid of fractions first!!

$35 = 24 + 5b$

$\frac{11}{5} = \frac{5b}{5}$

$\frac{11}{5} = b$

(ii) $(6,-5)$ & $(-4,-3)$ Solution: $y=\frac{-1}{5}x-\frac{19}{5}$

$m=\frac{-2}{10}=\frac{-1}{5}$

$y=-\frac{1}{5}x+b$

$-5=-\frac{1}{5}(6)+b$

$-5=-\frac{6}{5}+b$

$-\frac{5}{1}+\frac{6}{5}=b$

$-\frac{25}{5}+\frac{6}{5}=b$

$-\frac{19}{5}=b$

$$y=-\frac{1}{5}x-\frac{19}{5}$$

Finding the Equation of a Line

Method #1: Slope - Y Intercept Method

$$y = mx + b$$

Need: (1) the slope & (2) the *y*-intercept

Example... Determine the equation of a line that passes through the point (0, -5) and is perpendicular to the line 2x + 3y = 6.

Practice Problems...

Page 362 - 363
#4, 5, 8, 9, 11, 12, 17, 18, 19, 20, 21, 22, 23, 24