

Unit 3 Notes - Graphing Linear Equations

- Ex. 1 Find the slope of the line through the following points.

$$(4, 1) \quad (9, 7)$$

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

$$m = \frac{7-1}{9-4} = \frac{6}{5}$$

- Ex. 2 Find the slope of the line through the following points.

$$\begin{array}{cc} x_1, y_1 & x_2, y_2 \\ (5, 2) & (9, 2) \end{array}$$

$$\frac{0}{4} = 0$$

Ex. 3 Find the slope of the line through the following points.

(7, 1) (7, 6)

$$\frac{5}{0}$$

No Slope

Ex. 4 Find the equation of the line in slope-intercept form given the following information.

slope = 2 m

$$y = \underline{m}x + \underline{b}$$

y-intercept = -5 b

$$y = 2x - 5$$

- Ex. 5 Find the equation of the line in slope-intercept form given the following information.

slope = $\overset{m}{2}$
 through: $\underbrace{(4, 9)}_{x, y}$

$$y = mx + b$$

$$9 = 2 \cdot 4 + b$$

$$9 = 8 + b$$

$$\underline{1 = b}$$

$$\boxed{y = 2x + 1}$$

- Ex. 6 Find the equation of the line in slope-intercept form given the following information.

through: $\overset{x, y}{(3, 7)}$

and: $(1, -2)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - (-2)}{3 - 1}$$

$$\underline{m = \frac{9}{2}}$$

$$y = mx + b$$

$$7 = \frac{9}{2} \cdot 3 + b$$

$$7 = 13.5 + b$$

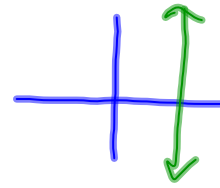
$$-6.5 = b$$

$$\boxed{y = \frac{9}{2}x - 6.5}$$

- Ex. 7 Find the equation of the line in slope-intercept form given the following information.

vertical line

through: (7, 1)



$$x = 7$$

- Ex. 8 Find the equation of the line in slope-intercept form given the following information.

horizontal line

through: (3, 8)

$$y = 8$$

- Ex. 9 Find the equation of the line in slope-intercept form given the following information.

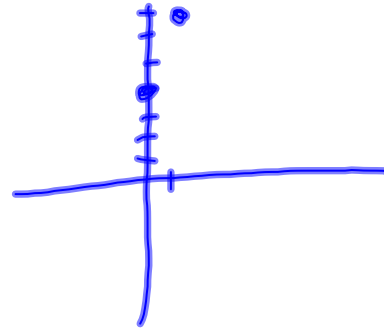
parallel to: $y = 3x - 8$

through: $(1, 7)$

parallel means
same slope

$$m = 3$$

$$y = 3x + 4$$



- Ex. 10 Find the equation of the line in slope-intercept form given the following information.

perpendicular to: $y = \frac{2}{1}x + 5$

through: $(4, 1)$
x y

perpendicular
means
opposite
reciprocal
slopes

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

$$y = mx + b$$

$$1 = -\frac{1}{2} \cdot 4 + b$$

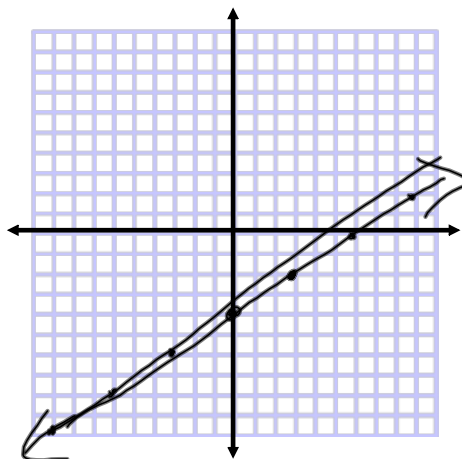
$$1 = -2 + b$$

$$3 = b$$

$$y = -\frac{1}{2}x + 3$$

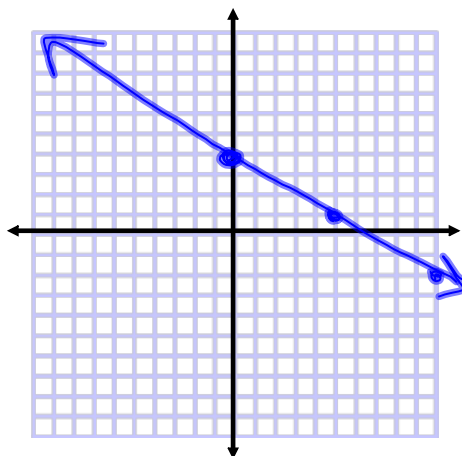
Ex. 11 Graph

$$y = \frac{2}{3}x - 5$$



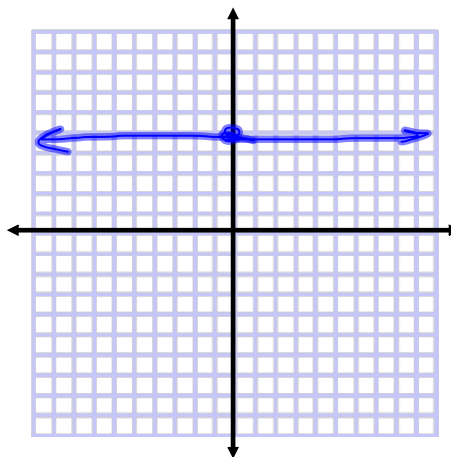
Ex. 12 Graph

$$3x + 5y = 20$$
$$\frac{-3x}{5} = \frac{-3x}{5} + \frac{20}{5}$$
$$y = -\frac{3}{5}x + 4$$



Ex. 13 Graph

$$y = 5$$



Ex. 14 Graph

$$x = 7$$

