

1.4) Linear Functions & Slope

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

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

$y = mx + b$
slope-intercept

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

ex 1) Find the slope.

a) $(-3, 4), (-4, -2)$
 $x_1 \ y_1 \ x_2 \ y_2$

b) $(4, -2), (-1, 5)$

$m = \frac{-2 - 4}{-4 - (-3)} = \frac{-6}{-1} = 6$

$m = \frac{5 - (-2)}{-1 - 4} = \frac{7}{-5}$

ex 2) Write an eqn. of a line given $m = 6$ & crosses $(2, -5)$.

→ use pt.-slope

$y - y_1 = m(x - x_1)$
 $y - (-5) = 6(x - 2)$

$y + 5 = 6(x - 2)$
 $\quad \quad \quad -5 \quad \quad \quad -5$

→ slope-intercept

$y = 6x - 12 - 5 \quad \therefore y = 6x - 17$

ex 3) $(-2, -1)$ & $(-1, -6)$. Write an equation.

$m = \frac{-6 - (-1)}{-1 - (-2)} = \frac{-5}{1}$

$y = mx + b$
 $(-1) = -5(-2) + b$

$-1 = 10 + b$

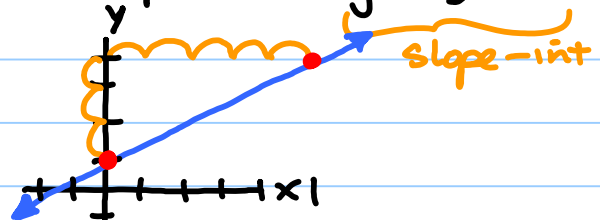
$\frac{-10}{-11} = \frac{-10}{-11} \quad b$

$\therefore y = -5x - 11$

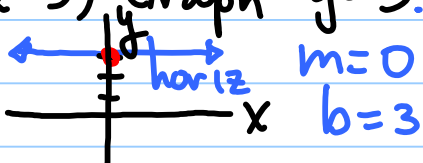
ex 4) State the slope & y-intercept of $y = \frac{3}{5}x + 1$.

Then graph.

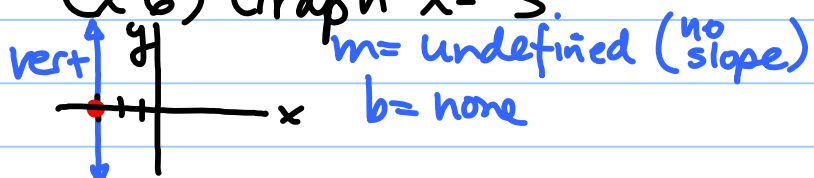
→ $m = \frac{3}{5}$ & $b = 1$



"make a cross" ex 5) Graph $y = 3$.



ex 6) Graph $x = -3$.



Standard Form of a Line

$$Ax + By = C$$

$$Ax + By + C = 0$$

* $A, B, \& C$ Integers

* A is positive

ex 7) Identify slope & y-int

→ slope-int.

$$\begin{array}{r} 3x + 6y - 12 = 0 \\ -3x \qquad +12 \qquad +12 \quad -3x \\ \hline 6y \qquad \qquad \qquad = \frac{-3x+12}{6} \end{array}$$

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

$$\therefore m = -\frac{1}{2} \quad \& \quad b = 2$$

ex 8) Find the x- & y intercepts & graph $3x - 2y - 6 = 0$

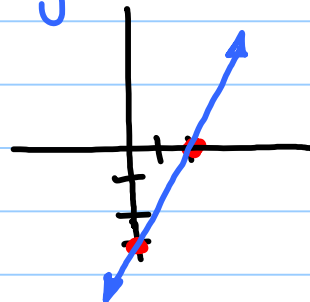
y=0

x=0

or "cover-up method"

$$\begin{array}{r} 3x - 2y - 6 = 0 \\ \qquad +6 \quad +6 \\ \hline 3x - 2y = 6 \end{array}$$

<u>X-int</u>	<u>y-int</u>
set y=0	set x=0
$3x = 6$	$-2y = 6$
$x = 2$	$y = -3$



Hw

p 188, # 2-70 EDE