

## 3.5 Write & Graph Equation of Lines

### Slope-Intercept Form

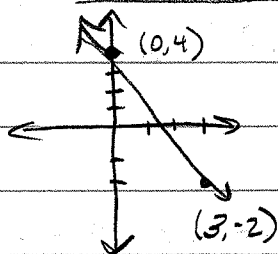
$$y = mx + b$$

$m$  = Slope (direction to next point)  $\frac{\text{rise}}{\text{run}}$

$b$  =  $y$ -intercept (where crosses  $y$ -axis - starting point)  
(0,  $b$ )

$x$  &  $y$  are the  $x$  &  $y$  coordinates

write in S.I. Form if given  $y$ -intercept



We want  $m$  &  $b$

1<sup>st</sup> - Find slope ( $m$ )

$$\frac{y_1 - y_2}{x_1 - x_2} = \frac{4 - (-2)}{0 - 3} = \frac{6}{-3} = -2$$

2<sup>nd</sup> - Find  $y$ -intercept ( $b$ )

\* crosses  $y$ -axis at 4

$$b = 4$$

3<sup>rd</sup> - Substitute  $m$  &  $b$  into formula

$$y = mx + b$$
$$y = -2x + 4$$

Example - If not given intercept

Write an equation for line thru  $(-1, 3)$  &  $\parallel$  to  $y = 2x - 3$

\* are given  $m$ , 2

\* find  $b$  by using  $(-1, 3)$

1<sup>st</sup> - plug in what we know ( $m=2$ )

$$y = 2x + b$$

2<sup>nd</sup> - plug in  $(-1, 3)$  for  $x$  &  $y$  in the eqn. Solve for  $b$

$$3 = 2(-1) + b$$

$$\frac{3}{+2} = \frac{-2}{+2} + b$$

$b = 5$   $\rightarrow$  3<sup>rd</sup> - plug in  $b$

$$y = 2x + 5$$

P184:

3-19 odd