

## 2.4 Write Equations of Lines

Given Slope ( $m$ ) and  $y$ -intercept ( $b$ ) ... use  $y = mx + b$

Called Slope-Intercept Form

$$m = -\frac{4}{3}, b = 2 \quad y = (m)x + (b) \quad \rightarrow \quad y = -\frac{4}{3}x + 2 \quad \text{or} \quad y = -\frac{4}{3}x - 2$$

Given slope ( $m$ ) and a point ... use  $y - y_1 = m(x - x_1)$

Called Point-Slope Form

$m = \text{slope}$      $x_1, y_1 = \text{coords of point}$

Goes through  $(5, 4)$  w/ slope of  $-3$

\* know point & slope so  $y - 4 = -3(x - 5)$

Now move it to SI Form (Solve for  $y$ )

$$y - 4 = -3x + 15$$

$$+4 \quad +4$$

$$y = -3x + 19$$

Given two points ... find slope & use P.S. + one of the points

Goes through  $(5, -2)$  and  $(2, 10)$

$$m = \frac{10 - (-2)}{2 - 5} = \frac{12}{-3} = -4$$

$$y - 10 = -4(x - 2)$$

$$y - 10 = -4x + 8$$

$$+10 \quad +10$$

$$y = -4x + 18$$

$$y + 2 = -4(x - 5)$$

$$y + 2 = -4x + 20$$

$$-2 \quad -2$$

$$y = -4x + 18$$

← SAME →

Write eq'n for line through  $(-2, 3)$  and

a)  $\parallel$  to  $y = -4x + 1$  -

b)  $\perp$  to  $y = -4x + 1$

parallel have same slope...

$m = -4$ , so  $\parallel m = (-4)$

perp have inv opp slope

$m = -4$ ,  $\perp m = (\frac{1}{4})$

Point-Slope Form

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

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

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

$$\begin{array}{r} y - 3 = -4x - 8 \\ +3 \quad \quad +3 \end{array}$$

$$y = -4x - 5$$

$$y - 3 = \frac{1}{4}(x + 2)$$

$$y - 3 = \frac{1}{4}x + \frac{2}{4}$$

$$\begin{array}{r} y - 3 = \frac{1}{4}x + \frac{1}{2} \\ +3 \quad \quad +3 \end{array}$$

$$y = \frac{1}{4}x + 3\frac{1}{2}$$

pid: 4-10e, 13, 18, 19-27o, 31, 32

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