

Find slope for $\textcircled{1} (0, -2), (1, 3)$
 $m=5$

$\textcircled{2} (3, 2), (5, -2)$
 $m=-2$

$\textcircled{3} (2, -1), (4, 0)$
 $m=\frac{1}{2}$

5.2 Linear Equations in Slope-Intercept Form

y-intercept - point on y-axis where the line intersects
 $(0, y)$

Slope (m) - $\frac{\text{rise}}{\text{run}}$ or $\frac{\text{Change in } y\text{'s}}{\text{Change in } x\text{'s}}$

*Put together, this is slope-intercept form *

$$y = \underline{m}x + \underline{b} \quad \leftarrow \text{If know } m \text{ \& } b, \text{ can write the equation for any line}$$

Finding equations for lines

Write it for line thru $P(-1, 3)$ with slope 2

1st - Find the slope (m)

$$m = 2$$

2nd - Find the y-intercept (b) by plugging in m & the coordinates of point

$$y = mx + b$$

$m=2, x=-1, y=3 \leftarrow \text{plug 'em in!}$

$$3 = 2(-1) + b \quad \text{Solve for } b$$

$$3 = -2 + b$$

$$5 = b$$

3rd - Write the equation of the line.

Use $y = mx + b$ & put in m & b

$$* m = 2 \text{ \& } b = 5$$

$$y = 2x + 5$$

Write the equation for line $C(-1, 5)$ & $D(2, -3)$

1st - Find Slope (m)

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{5 - (-3)}{-1 - 2} = \frac{8}{-3} = -\frac{8}{3}$$

2nd - Find b

$y = mx + b$ ← plug in C or D plus slope

$$m = -\frac{8}{3}; C(-1, 5)$$

$$5 = -\frac{8}{3}(-1) + b$$

$$5 = \frac{8}{3} + b$$

$$-\frac{8}{3} \quad -\frac{8}{3}$$

$$2\frac{1}{3} = b$$

3rd - Write equation

$$m = -\frac{8}{3} \quad b = 2\frac{1}{3}$$

$$y = -\frac{8}{3}x + 2\frac{1}{3}$$

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