

Writing Equations of Lines:

$$m = \frac{y_1 - y_2}{x_1 - x_2} \text{ (slope)}$$

Slope-Intercept Form:

- m is the Slope
- b is the y-int

$$y = mx + b$$

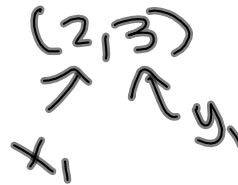
Point-Slope Form:

- m is the Slope
- $x_1$  is the x-value of pt.
- $y_1$  is the y-value of pt.

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

\*graphing form

\*equation form



Write the equation of the line given the situations

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

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

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

$$\begin{array}{r} +3 \\ +3 \end{array}$$

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

2) (-4, 5) and (4, 3).  $m = \frac{5-3}{-4-4} = \frac{2}{-8} = -\frac{1}{4}$

$$y - 5 = -\frac{1}{4}(x + 4)$$

$$y - 5 = -\frac{1}{4}x - 1$$

$$\begin{array}{r} +5 \\ +5 \end{array}$$

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

3) (6, -5) and (10, -5)  $m = \frac{-5+5}{10-10} = \frac{0}{-4} = 0$

$$y + 5 = 0(x - 10)$$

$$y + 5 = 0x - 0$$

$$y + 5 = 0$$

$$\begin{array}{r} -5 \\ -5 \end{array}$$

$$y = -5$$

4) Slope of  $-\frac{3}{5}$  and passes through (5, -2)

$$m = -\frac{3}{5}$$

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

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

$$\begin{array}{r} -2 \\ -2 \end{array}$$

$$y = -\frac{3}{5}x + 1$$

5) Slope  $\frac{1}{2}$  and passes through (2, 3)

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

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

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

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