

# SLOPE INTERCEPT FORM

$$y = mx + b$$

## FINDING EQUATION OF THE LINE

①  $(1, 2)$  SLOPE = 3  
 $\begin{matrix} x \\ y \end{matrix}$

STEP 1: FIND  $m$

$$m = 3$$

STEP 2: PLUG IN GIVEN POINT FOR  $x, y$  AND  $m$  AND SOLVE FOR  $b$

$$y = mx + b$$

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

$$2 = 3 + b$$

$$2 - 3 = b$$

$$-1 = b$$

STEP 3: WRITE ANSWER

$$y = mx + b$$

$$y = 3x - 1$$

②  $\begin{pmatrix} x \\ y \end{pmatrix} (-5, 1)$  SLOPE =  $-\frac{3}{2}$

1.  $m = -\frac{3}{2}$

2.  $y = mx + b$

$$1 = -\frac{3}{2}(-5) + b$$

$$1 = \frac{15}{2} + b$$

$$1 - \frac{15}{2} = b$$

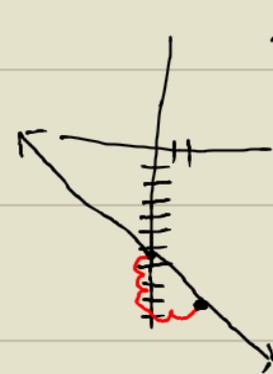
$$-\frac{13}{2} = b$$

3.  $y = mx + b$

$$y = -\frac{3}{2}x - \frac{13}{2}$$



$$m = \frac{3 - \text{up } 3}{1 - R 1}$$



$$m = \frac{-3 \rightarrow \text{Down } 3}{2 \rightarrow R 2}$$

③  $(4, 1)$  UNDEFINED SLOPE

$$x = \#$$

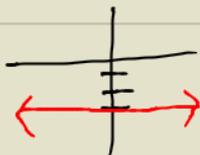
$$x = 4$$



④  $(-2, -3)$  SLOPE = 0

$$y = \#$$

$$y = -3$$



⑤ Horiz. LINE  $(-4, -5)$

$$y = -5$$

⑥ Vertical LINE  $(5, -2)$

$$x = 5$$

$$x = \#$$

⑦  $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (4, 10) & & (0, 2) & \\ & & x & y \end{matrix}$

1. FIND  $m$

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

$$m = \frac{(2) - (10)}{(0) - (4)}$$

$$= \frac{-8}{-4} = 2$$

2.  $y = mx + b$

$$2 = 2(0) + b$$

$$2 = b$$

3.  $y = mx + b$

$$y = 2x + 2$$