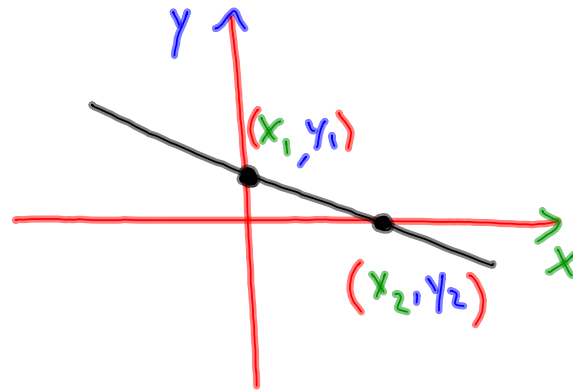


WHAT YOU NEED
TO REMEMBER ABOUT LINES.

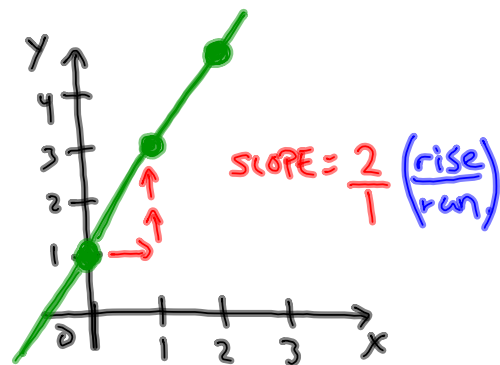


SLOPE → HOW MANY STEPS UP OR DOWN
(a) FOR EVERY 1 STEP TO THE RIGHT

$$\text{SLOPE} = \frac{\text{RISE}}{\text{RUN}} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y = (a) \cdot x + b$$

Slope.

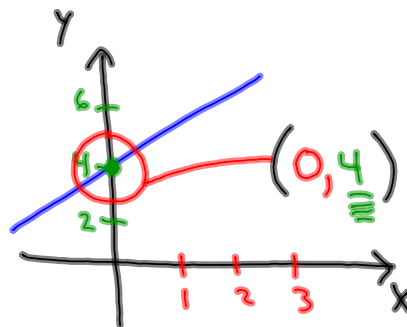


INITIAL VALUE. → THE Y-VALUE WHEN
THE LINE CROSSES THE
Y-AXIS.

(b)

THE X-VALUE IS ALWAYS 0.

$$y = a \cdot x + b$$



INITIAL VALUE
IS 4

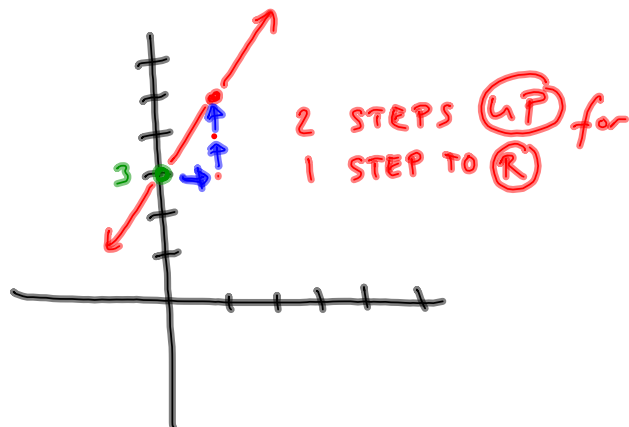
GIVEN A SLOPE ... (a)
AND AN INITIAL VALUE ... (b)

WRITE THE RULE & PLOT THE GRAPH.

- SLOPE = $\frac{2}{1} = 2$
- INITIAL VALUE = 3

$$y = a \cdot x + b$$

$$y = 2x + 3$$



HOW TO WRITE A RULE GIVEN 2 PTS.

(1) WRITE $y = a \cdot x + b$.

(2) FIND SLOPE $a = \frac{y_2 - y_1}{x_2 - x_1}$

(3) WRITE $y = a \cdot x + b$ WITH THE NEW SLOPE.
CHOOSE AN (x, y) POINT AND PLUG THE COORDINATES IN
THEN WORK BACKWARDS TO SOLVE FOR b

(4) WRITE THE FINAL RULE

$$y = a \cdot x + b$$

Ex: FIND THE RULE FOR THE LINE PASSING THROUGH

$(-2, -6.5)$ AND $(3, 16)$

x_1 y_1

x_2 y_2

$$y = a \cdot x + b$$

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{16 + 6.5}{3 + 2} = \frac{22.5}{5} = 4.5$$

$$y = 4.5x + b$$

$$16 = 4.5(3) + b$$

$$16 = 13.5 + b$$

$$-13.5 \quad -13.5$$

$$2.5 = b$$

ANS: $y = 4.5x + 2.5$