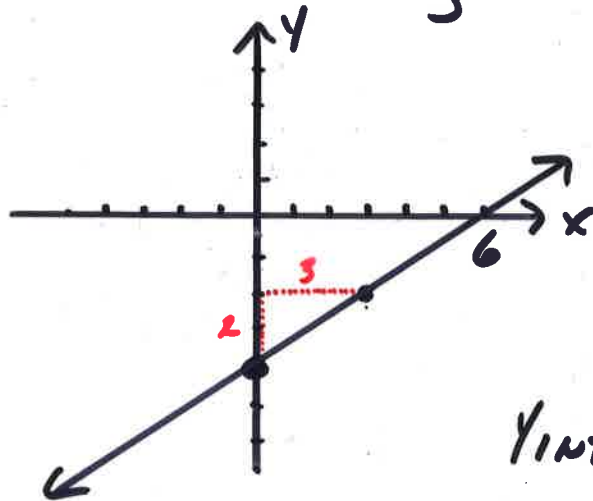


2.3 LINEAR EQUATIONS

Ex: GRAPH $Y = \frac{2}{3}X - 4$



$$Y = \frac{2}{3}X - 4$$

$$Y = mX + b$$

$$Y_{INT} = -4$$

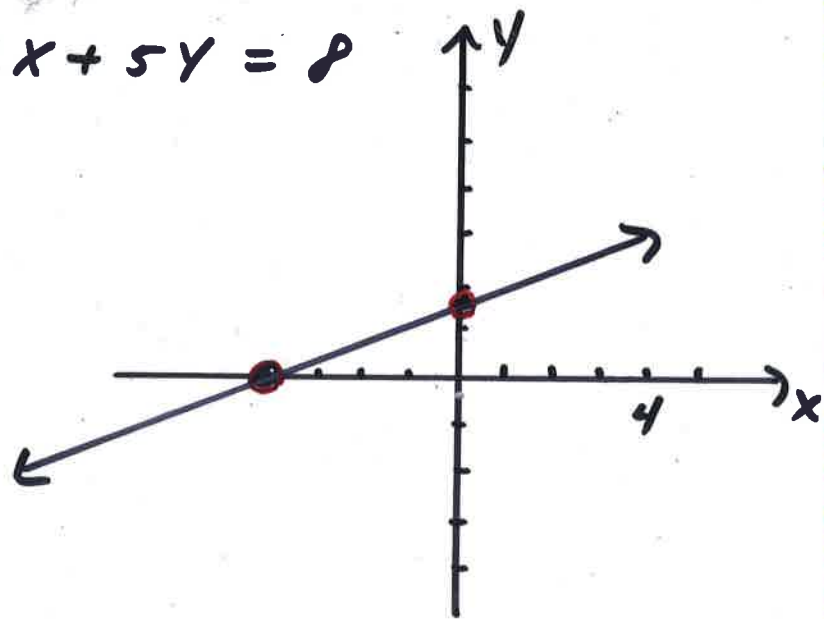
$$SLOPE = \frac{2}{3}$$

Ex: GRAPH

$$-2X + 5Y = 8$$

$$X_{INT} = \frac{8}{-2}$$

$$Y_{INT} = \frac{8}{5}$$



SLOPE FORMULA: $M = \frac{Y_2 - Y_1}{X_2 - X_1}$

Ex: FIND SLOPE OF LINE THROUGH
(-2, 7) AND (1, -4)

$$M = \frac{-4 - 7}{1 - (-2)} = \frac{-11}{3}$$

POINT-SLOPE FORM OF LINE

SLOPE M THROUGH (x_1, y_1)

$$Y - y_1 = M(x - x_1)$$

Ex: FIND THE EQUATION OF THE
LINE WITH SLOPE $\frac{4}{7}$ AND
PASSING THROUGH
(2, -5).

$$Y - (-5) = \frac{4}{7}(x - 2)$$

$$Y + 5 = \frac{4}{7}(x - 2)$$

$$Y + 5 = \frac{4}{7}x - \frac{8}{7}$$

$$\underline{-5} \qquad \underline{-\frac{35}{7}}$$

$$Y = \frac{4}{7}x - \frac{43}{7}$$

NOTE:

PARALLEL $M_1 = M_2$

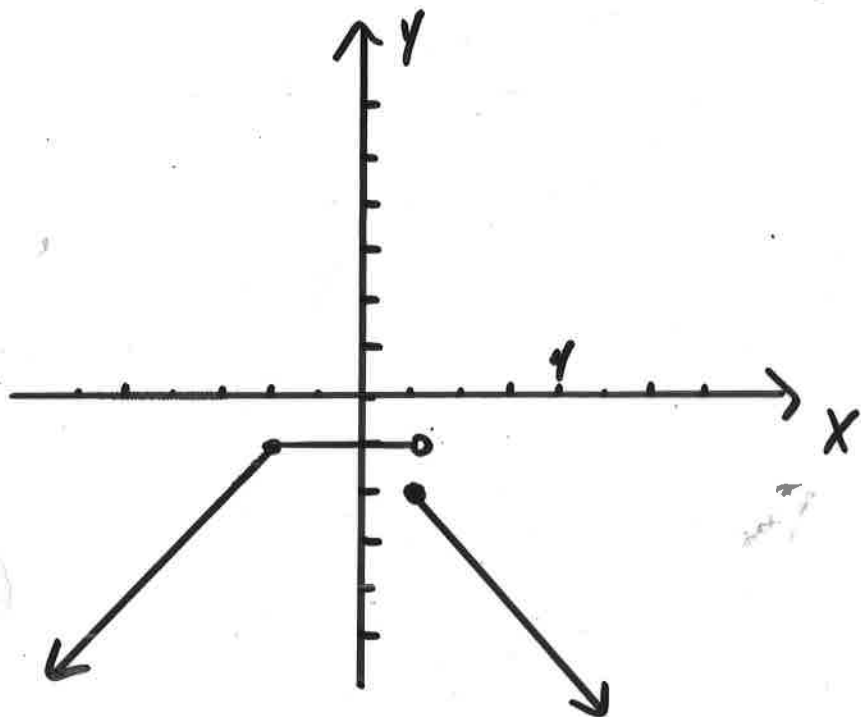
PERPENDICULAR

$$M_1 = -\frac{1}{M_2}$$

EXTENSION: PIECEWISE FUNCTIONS

CONSIDER

$$f(x) = \begin{cases} x+1 & \text{if } x \leq -2 \\ -1 & \text{if } -2 < x < 1 \\ -x-1 & \text{if } x \geq 1 \end{cases}$$



2.3 DIRECT VARIATION

IF Y VARIES DIRECTLY WITH X ,

then $Y = kX$

$K =$ CONSTANT OF VARIATION

YES: $Y = 2X$

$$3Y = 2X \rightarrow Y = \frac{2}{3}X$$

NO: $Y = 2X + 3$

$$5X - 2Y = 4$$