

3.6 Write Linear Equations

$$y - y_1 = m(x - x_2)$$

POINT
SLOPE
FORM

$(-2, 3)$ slope 4

$$y - y_1 = m(x - x_2)$$

$$y - 3 = 4(x - (-2)) \text{ or } 4(x + 2)$$

$$y - 3 = 4x + 8$$

$$y = 4x + 11$$

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x_1, y_1
 $(8, 1)$ $(-2, 9)$

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

$$\frac{9 - 1}{-2 - 8} = \frac{8}{-10} \text{ or } -\frac{4}{5}$$

$$m = -\frac{4}{5} \text{ (SLOPE)}$$

$$y - y_1 = m(x - x_2)$$

$$y - 1 = -\frac{4}{5}(x - 8)$$

$$y - 1 = -\frac{4}{5}x + \frac{32}{5}$$

$$y = -\frac{4}{5}x + \frac{37}{5}$$

$$-\frac{4}{5} \cdot -8 = \frac{32}{5}$$

Hard

example $(x_1, y_1) \quad (x_2, y_2)$
 $(3, 4) \quad (5, -4)$

$$\frac{-4-4}{5-3} = \frac{-8}{2} \text{ or } -4 \quad \text{SLOPE} = -4$$

$$y - y_1 = m(x - x_2)$$

$$y - 4 = -4(x - 5)$$

$$y - 4 = -4x - 20$$

ans. \rightarrow

$$\begin{array}{r} +4 = \quad +4 \\ \hline y = -4x - 16 \end{array}$$

$(x_1, y_1) \quad (x_2, y_2)$
 $(3, -6) \quad (-1, 2)$

$$\frac{2 - (-6)}{-1 - 3} = \frac{2 + 6}{-1 - 3} = \frac{8}{-4} = -2 \quad \text{SLOPE}$$

$$y + 6 = -2(x - 3)$$

$$y + 6 = -2x + 6$$

$$\therefore 6 = \quad -6$$

ans. \rightarrow

$$y = -2x + 0$$