

1. x_1, y_1
 $(-2, 7)$

Parallel (same slope).

$$\frac{4y}{4} = \frac{16x - 3}{4}$$
$$y = 4x - \frac{3}{4}$$
$$m = 4$$
$$y - y_1 = m(x - x_1)$$
$$y - 7 = 4(x + 2)$$
$$y - 7 = 4x + 8$$
$$0 = 4x - y + 8 + 7$$
$$\boxed{4x - y + 15 = 0}$$

2. x_1, y_1
(4, 3)

Perp. (opp
rec.
slope)

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

$$y - 3 = -\frac{1}{5}(x - 4)$$

$$5y - 15 = -1(x - 4)$$

$$5y - 15 = -1x + 4$$

$$1x + 5y - 15 - 4 = 0$$

$$1x + 5y - 19 = 0$$

$$-y = \frac{-5x + 8}{-1}$$

$$y = 5x - 8$$

$$m = \frac{-1}{5}$$

3. $x\text{-int} = 3$ $y\text{-int} = -4$
 $\begin{matrix} x_1 & y_1 \\ (3, 0) \end{matrix}$ $\begin{matrix} x_2 & y_2 \\ (0, -4) \end{matrix}$

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

$$m = \frac{-4 - 0}{0 - 3}$$

$$m = \frac{-4}{-3}$$

$$m = \frac{+4}{3}$$

$$y = mx + b.$$

$$m = \frac{4}{3}$$

$$b = -4$$

$$y = \frac{4}{3}x - 4$$

$$4. \quad \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (6, 2) & & (1, -5) & \end{matrix}$$

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

$$m = \frac{-5 - 2}{1 - 6}$$

$$m = \frac{-7}{-5}$$

$$m = +\frac{7}{5}$$

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

$$y - 2 = \frac{7}{5}(x - 6)$$

$$5y - 10 = 7(x - 6)$$

$$5y - 10 = 7x - 42$$

$$0 = 7x - 5y - 42 + 10$$

$$7x - 5y - 32 = 0$$

5. (x_1, y_1)
 $(4, -3)$

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

$$y + 3 = 5(x - 4)$$

$$y + 3 = 5x - 20 - 3$$

$$y = 5x - 23$$

Parallel (same slope)

$$2(y - 1) = 10x - 4$$

$$2y - 2 = 10x - 4 + 2$$

$$\frac{2y}{2} = \frac{10x}{2} - \frac{2}{2}$$

$$y = 5x - 1$$

$$m = 5$$

$$6. \quad m = \frac{0}{1} \quad (-2, 6) \quad \text{Q/R}$$

Crossing through "y"
 $y = 6$

$$\boxed{y - 6 = 0}$$

$$m = \frac{0}{1} \quad \begin{matrix} x_1, y_1 \\ (-2, 6) \end{matrix}$$

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

$$y - 6 = 0(x - x_1)$$

$$\boxed{y - 6 = 0}$$

$$7. \text{ Vert } m = \frac{1}{0} \quad \begin{matrix} x & y \\ (8, -1) \end{matrix}$$

Crossing through "X"

$$x = 8$$

$$\boxed{x - 8 = 0}$$

$$\text{OR} \quad \text{Vert } m = \frac{1}{0} \quad \begin{matrix} x_1, y_1 \\ (8, -1) \end{matrix}$$

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

$$y + 1 = \frac{1}{\cancel{0}}(x - 8)$$

$$0 = 1(x - 8)$$

$$0 = x - 8$$

$$\boxed{x - 8 = 0}$$