

121 § 1.4 #5 5, 24, 26, 36, 44, 82

#5 19-26 Find the equation of the line through the given pair of points. Solve it for  $y$ , if possible.

(24)  $(-6, 4) = (x_1, y_1)$ ,  $(x_2, y_2) = (2, 4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 4}{2 - (-6)} = \frac{0}{8} = 0 \Rightarrow \boxed{y = 4}$$

Horizontal

(26)  $(x_1, y_1) = (-5, 6)$ ,  $(x_2, y_2) = (-5, 4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 6}{-5 - (-5)} = \frac{-2}{0} \Rightarrow \boxed{x = -5}$$

Vertical

#5 35-42 Write each eq'n in slope-intercept form and identify the slope & y-intercept of the line.

(36)  $2x - 2y = 1$

$$-2y = -2x + 1$$

$$y = \frac{-2x + 1}{-2}$$

$$= \frac{-2x}{-2} + \frac{1}{-2} = x - \frac{1}{2}, \text{ i.e., } \boxed{y = x - \frac{1}{2}}$$

$$\boxed{m = 1, (0, b) = (0, -\frac{1}{2})}$$

#5 43-46 Find eq'n of each line in slope-intercept form.

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(44) The line through  $(6, 9)$  with slope  $-\frac{1}{3}$ .

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

$$y = -\frac{1}{3}(x - 6) + 9$$

Simplify

6

$$y = -\frac{1}{3}x + \frac{6}{3} + 9 = -\frac{1}{3}x + 2 + 9$$

$$\boxed{y = -\frac{1}{3}x + 11}$$

#5 73-84 write an eq'n in standard form using only integers for each of the lines described. Sketch each.

(82) The line perpendicular to  $3x - y = 9$  and containing  $(0, 0) = (x_1, y_1)$ .

Find  $m$ :  $3x - y = 9$

$$-y = -3x + 9$$

$$y = 3x - 9$$

$$m = 3$$

Find  $m_{\perp}$ :  $m_{\perp} = -\frac{1}{3}$  if  $m = \frac{3}{1}$

$$y = m_{\perp}(x - x_1) + y_1$$

$$y = -\frac{1}{3}(x - 0) + 0 \Rightarrow y = -\frac{1}{3}x$$

$$\Rightarrow \frac{1}{3}x + y = 0$$

$$\Rightarrow \boxed{x + 3y = 0}$$