

Section 1.3

(48) Find the equation of the line through $(\frac{1}{2}, -\frac{2}{3})$ and perpendicular to the line $4x - 8y = 1$

$$4x - 8y = 1$$
$$\begin{array}{r} -1+8y \\ -1+8y \end{array}$$

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

$$\frac{1}{2}x - \frac{1}{8} = y$$

$$\text{slope} = \frac{1}{2}$$

perpendicular
slope = -2

$$y - b = m(x - a)$$

$$y + \frac{2}{3} = -2(x - \frac{1}{2})$$

$$y = -2(x - \frac{1}{2}) - \frac{2}{3}$$

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

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

(52) (b) Find the equation of the line with slope = -2 and passes through $(4, -1)$

$$y - b = m(x - a)$$

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

$$y = -2x + 8 - 1$$

$$\boxed{y = -2x + 7}$$

(c) sketch the graph of the line.

$$\underline{y\text{-intercept} = 7}$$

$$\underline{x\text{-intercept}}$$
$$0 = -2x + 7$$

$$2x = 7$$

$$x = \frac{7}{2}$$

