

(1) [3] Determine the equation of the line of slope  $-2/3$  through the point  $(1, -1)$ .

Here  $m = -\frac{2}{3}$ ,  $(x_1, y_1) = (1, -1)$ .

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

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

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

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

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

(2) [4] Determine the slope and  $y$ -intercept of the line  $2x - 3y = 7$ .

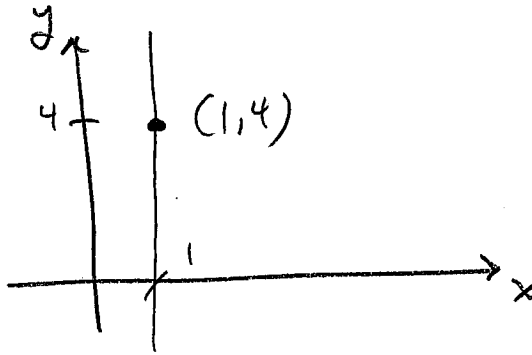
$$2x - 3y = 7$$

$$-3y = -2x + 7$$

$$y = \frac{2}{3}x - \frac{7}{3}$$

$$\therefore \text{slope } m = \frac{2}{3}, \text{ } y\text{-intercept } (0, -\frac{7}{3}).$$

(3) [3] Determine the equation of the line through (1, 4) with slope undefined.

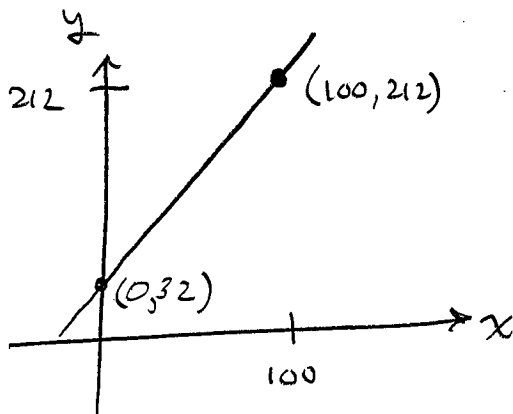


$$\therefore \boxed{x=1}$$

(4) [5] Temperature can be measured using degrees Celsius ( $^{\circ}C$ ) or degrees Fahrenheit ( $^{\circ}F$ ), and the relationship between the two is linear. Given that  $0^{\circ}C$  corresponds to  $32^{\circ}F$  and  $100^{\circ}C$  corresponds to  $212^{\circ}F$ , determine an equation relating  $^{\circ}C$  and  $^{\circ}F$ .

Let  $x = \text{temperature } (^{\circ}C)$

$y = \text{temperature } (^{\circ}F)$



$$m = \frac{212 - 32}{100 - 0} = \frac{180}{100} = \frac{9}{5}$$

$$\therefore y - 32 = \frac{9}{5}(x - 0)$$

$$\boxed{y = \frac{9}{5}x + 32}$$