

(1) Solve the following equations:

(a) $2q + 3 = 5 - 2q + 6$

$$2q + 3 = 11 - 2q$$

$$2q + 2q = 11 - 3$$

$$4q = 8$$

$$q = \frac{8}{4}$$

$$q = 2$$

(b) $4(t - 3) + 2(t - 2) = 5$

$$4t - 12 + 2t - 4 = 5$$

$$6t - 16 = 5$$

$$6t = 5 + 16$$

$$6t = 21$$

$$t = \frac{21}{6}$$

$$t = 3\frac{3}{6} = 3\frac{1}{2}$$

(c) $\frac{(2y-1)}{5} = 1\frac{3}{4} - \frac{(2-y)}{2}$

$$\text{LCD} = 20$$

$$\frac{4}{1} \times \frac{(2y-1)}{5} = 5\frac{20}{1} \times \frac{7}{4} - \frac{10}{1} \times \frac{(2-y)}{2}$$

$$4 \times (2y-1) = 5 \times 7 - 10 \times (2-y)$$

$$8y - 4 = 35 - 20 + 10y$$

$$8y - 10y = 35 - 20 + 4$$

$$-2y = 19$$

$$y = \frac{19}{-2} = -9\frac{1}{2}$$

$$(d) (p+2)^2 = (p-1)(p+1)$$

$$(p+2)(p+2) = (p-1)(p+1)$$

$$p^2 + 2p + 2p + 4 = p^2 + 1p - 1p - 1$$

$$p^2 + 4p + 4 = p^2 - 1$$

$$\underline{p^2} + 4p - \underline{p^2} = -1 - 4$$

$$4p = -5$$

$$p = -\frac{5}{4} = -1\frac{1}{4}$$

$$(e) x^2 - 2x + 6 = x + 10$$

$$x^2 - 2x + 6 - x - 10 = 0$$

$$x^2 - 3x - 4 = 0$$

$$(x-4)(x+1) = 0$$

$$x-4=0 \quad \text{or} \quad x+1=0$$

$$x=4$$

$$x=-1$$

$$(f) \frac{(m+1)}{m} + \frac{3}{4m} = \frac{-1}{2}$$

$$LCD = 4m \rightarrow 4m \neq 0$$

$$m \neq 0$$

$$\frac{\cancel{4m}}{1} \times \frac{(m+1)}{\cancel{m}} + \frac{\cancel{4m}}{1} \times \frac{3}{\cancel{4m}} = \frac{\cancel{4m}}{1} \times \frac{-1}{\cancel{2}}$$

$$4 \times (m+1) + 1 \times 3 = 2m \times -1$$

$$4m + 4 + 3 = -2m$$

$$4m + 7 = -2m$$

$$4m + 2m = -7$$

$$6m = -7$$

$$m = -\frac{7}{6}$$

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

$$(g) (4k - 1)(3k + 6) = 0$$

$$4k - 1 = 0 \quad \text{or} \quad 3k + 6 = 0$$

$$4k = 1 \qquad 3k = -6$$

$$k = \frac{1}{4} \qquad k = -\frac{6}{3}$$

$$k = -2$$

(2) Solve for x and y :

(a) $3x = 3y + 1$ and $2y = -2$

$$3x = 3(-1) + 1 \qquad \begin{array}{l} 2y = -2 \\ \hline 2 \quad 2 \end{array}$$

$$3x = -3 + 1$$

$$3x = -2$$

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

$$y = -1$$

$$\left(-\frac{2}{3}; -1\right)$$

(b) $\frac{2(x - 3)}{2} = \frac{0}{2}$ and $2x - 3y = 2$

$$x - 3 = 0$$

$$x = 3$$

$$2(3) - 3y = 2$$

$$6 - 3y = 2$$

$$-3y = 2 - 6$$

$$-3y = -4$$

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

$$y = 1\frac{1}{3}$$

$$\left(3; 1\frac{1}{3}\right)$$