

Ex 2.5

Q 1

(a) $x^2 + 9x + 4 = 0$ \rightarrow sum = -9
 \rightarrow product = 4

(c) $x^2 - 7x + 2 = 0$ \rightarrow sum = 7
 \rightarrow product = 2

(e) $2x^2 - 7x + 1 = 0$
($\div 2$) $x^2 - \frac{7}{2}x + \frac{1}{2} = 0$ \rightarrow sum = $\frac{7}{2}$
 \rightarrow product = $\frac{1}{2}$

(g) $3x^2 + 10x - 2 = 0$
($\div 3$) $x^2 + \frac{10}{3}x - \frac{2}{3} = 0$ \rightarrow sum = $-\frac{10}{3}$
 \rightarrow product = $-\frac{2}{3}$

(i) $3 - 2x - x^2 = 0$
($\times -1$) $x^2 + 2x - 3 = 0$ \rightarrow sum = -2
 \rightarrow product = -3

$$x^2 - \text{Sum } x + \text{product} = 0$$

Q2

$$(a) \quad x^2 - (-3)x + (-1) = 0$$
$$x^2 + 3x - 1 = 0$$

$$(c) \quad x^2 - (7)x + (-5) = 0$$
$$x^2 - 7x - 5 = 0$$

$$(e) \quad x^2 - \left(-\frac{5}{2}\right)x + (-2) = 0$$
$$x^2 + \frac{5}{2}x - 2 = 0$$

$$(\times 2)$$
$$2x^2 + 5x - 4 = 0$$

$$(g) \quad x^2 - \left(-\frac{1}{4}\right)x + \left(-\frac{1}{3}\right) = 0$$
$$x^2 + \frac{1}{4}x - \frac{1}{3} = 0$$

$$(\times 12)$$
$$12x^2 + 3x - 4 = 0$$

Q3 (i) $(4, 6)$ sum = 10 prod = 24

eqn: $x^2 - 10x + 24 = 0$

(ii) $(2, -3)$ sum = -1 prod = -6

eqn: $x^2 + x - 6 = 0$

(iii) $(-5, -1)$ sum = -6 prod = 5

eqn: $x^2 + 6x + 5 = 0$

(iv) $(\sqrt{5}, 4)$ sum = $\sqrt{5} + 4$ prod = $4\sqrt{5}$

eqn: $x^2 - (\sqrt{5} + 4)x + 4\sqrt{5} = 0$
 ~~$x^2 - \sqrt{5}x + 4\sqrt{5} = 0$~~

(v) $(a, 3a)$ sum = $4a$ prod = $3a^2$

eqn: $x^2 - 4ax + 3a^2$

(vi) $(\frac{2}{5}, \frac{3}{5})$ sum = 1 prod = $\frac{6}{25}$

eqn: $x^2 - x + \frac{6}{25} = 0$

\downarrow (x25)
 $25x^2 - 25x + 6 = 0$

$$(vii) \left(\frac{2}{b}, \frac{3}{b}\right) \quad \text{sum} = \frac{5}{b} \quad \text{prod} = \frac{6}{b^2}$$

$$\begin{aligned} \text{eqn: } x^2 - \frac{5}{b}x + \frac{6}{b^2} &= 0 \\ (\times b^2) \quad b^2x^2 - 5bx + 6 &= 0 \end{aligned}$$

$$(viii) \left(\frac{5}{2}, \frac{3}{5}\right) \quad \text{sum} = \frac{31}{10} \quad \text{Prod} = \frac{15}{10}$$

$$\begin{aligned} \text{eqn: } x^2 - \frac{31}{10}x + \frac{15}{10} &= 0 \\ (\times 10) \quad 10x^2 - 31x + 15 &= 0 \end{aligned}$$