Exercise 2A

Question 4:

We have

$$f(x) = 5x^2 - 4 - 8x = 5x^2 - 8x - 4$$
$$= 5x^2 - 10x + 2x - 4$$
$$= 5x(x - 2) + 2(x - 2)$$
$$f(x) = 0 \Rightarrow (x - 2)(5x + 2) = 0$$
$$\Rightarrow x - 2 = 0 \quad \text{or} \quad 5x + 2 = 0$$
$$\therefore x = 2, \frac{-2}{5}$$

So, the zeroes of f(x) are 2 and $\frac{-2}{5}$

Sum of zeroes = $2 + \left(\frac{-2}{5}\right) = \frac{10 - 2}{5} = \frac{8}{5} = -\frac{\text{Coeff. of } x}{\text{Coeff. of } x^2}$

Product of zeroes = $2 \times \left(\frac{-2}{5}\right) = \frac{-4}{5} = \frac{\text{Constant term}}{\text{coeff. of } x^2}$

Question 5:

We have

$$f(x) = 6x^2 - 3 - 7x$$
$$= 6x^2 - 9x + 2x - 3$$
$$= 3x(2x - 3) + (2x - 3)$$
$$f(x) = 0 \Rightarrow (2x - 3)(3x + 1) = 0$$
$$\Rightarrow 2x - 3 = 0 \quad \text{or} \quad 3x + 1 = 0$$
$$\therefore x = \frac{3}{2}, -\frac{1}{3}$$

Sum of zeros = $\frac{3}{2} + \left(-\frac{1}{3}\right) = \frac{9 - 2}{6} = \frac{7}{6}$

$$= -\frac{\text{Coeff. of } x}{\text{Coeff. of } x^2}$$

Product of zeros = $\frac{3}{2} \times \left(-\frac{1}{3}\right) = -\frac{1}{2} = \frac{-3}{6}$

$$= \frac{\text{Constant term}}{\text{Coeff. of } x^2}$$

Question 6:

We have

$f(x) = 2x^2 - 11x + 15$

$\quad = 2x^2 - 6x - 5x + 15$

$\quad = 2x(x-3) - 5(x-3) = (x-3)(2x-5)$

Now, $f(x) = (x-3)(2x-5) = 0$

$\therefore x - 3 = 0$ or $2x - 5 = 0$

$\Rightarrow x = 3$ or $x = \dfrac{5}{2}$

So zeros of f(x) are 3 and $\dfrac{5}{2}$

Sum of zeros $= 3 + \dfrac{5}{2} = \dfrac{11}{2} = -\dfrac{(-11)}{2}$

$\qquad\qquad = -\dfrac{\text{Coeff. of } x}{\text{Coeff. of } x^2}$

product of zeros $= 3 \times \dfrac{5}{2} = \dfrac{15}{2} = \dfrac{\text{Constant term}}{\text{Coeff. of } x^2}$

********** END *********