



### Exercise 2A

Question 7:

We have

$$\begin{aligned}f(x) &= x^2 - 5 = (x)^2 - (\sqrt{5})^2 \\&= (x - \sqrt{5})(x + \sqrt{5}) \\&\quad [\because a^2 - b^2 = (a - b)(a + b)]\end{aligned}$$

$$f(x) = 0 \Rightarrow (x - \sqrt{5})(x + \sqrt{5}) = 0$$

$$\therefore x - \sqrt{5} = 0 \text{ or } x + \sqrt{5} = 0$$

$$\Rightarrow x = \sqrt{5} \text{ or } x = -\sqrt{5}$$

So the zeros of  $f(x)$  are  $\sqrt{5}$  and  $-\sqrt{5}$

$$\text{Sum of zeros} = \sqrt{5} + (-\sqrt{5}) = 0 = -\frac{\text{Coeff. of } x}{\text{Coeff. of } x^2}$$

$$\text{Product of zeros} = (\sqrt{5})(-\sqrt{5}) = -5 = \frac{-5}{1} = \frac{\text{Constant term}}{\text{Coeff. of } x^2}$$

Question 8:

Let

$$\begin{aligned}f(x) &= 8x^2 - 4 = 4(2x^2 - 1) = 4[(\sqrt{2}x)^2 - 1^2] \\&\quad [a^2 - b^2 = (a - b)(a + b)] \\&= 4(\sqrt{2}x - 1)(\sqrt{2}x + 1)\end{aligned}$$

$$f(x) = 0 \Rightarrow (\sqrt{2}x - 1)(\sqrt{2}x + 1) = 0$$

$$\therefore \sqrt{2}x - 1 = 0 \text{ or } \sqrt{2}x + 1 = 0$$

$$\therefore x = \frac{1}{\sqrt{2}} \text{ or } x = -\frac{1}{\sqrt{2}}$$

So, the zeros of  $f(x)$  are  $\frac{1}{\sqrt{2}}$  and  $-\frac{1}{\sqrt{2}}$

$$\text{Sum of zeros} = \left(\frac{1}{\sqrt{2}}\right) + \left(-\frac{1}{\sqrt{2}}\right) = 0 = \frac{0}{8} = \frac{\text{Coeff. of } x}{\text{Coeff. of } x^2}$$

$$\begin{aligned}\text{Product of zeros} &= \left(\frac{1}{\sqrt{2}}\right) \times \left(-\frac{1}{\sqrt{2}}\right) = -\frac{1}{2} = \frac{-4}{8} \\&= \frac{\text{constant term}}{\text{Coeff. of } x^2}\end{aligned}$$

Question 9:

$$\text{Let, } f(x) = 5u^2 + 10u = 5u(u + 2)$$

$$f(x) = 0 \Rightarrow 5u(u + 2) = 0$$

$$\therefore u = 0 \quad \text{or} \quad u + 2 = 0$$

$$\Rightarrow u = 0 \quad \text{or} \quad u = -2$$

$$\text{Sum of zeros} = 0 + (-2) = -2 = -\frac{10}{5}$$

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

$$\text{Product of zero} = 0 \times (-2) = 0 = \frac{0}{5} = \frac{\text{Constant term}}{\text{Coeff. of } x^2}$$

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