

Q) Let $f(x)$ be a quadratic polynomial such that $f(-1) + f(2) = 0$. If one of the roots of $f(x) = 0$ is 3, then its other root lies in :

Solution:

Let the other root is α .

$$\therefore f(x) = a(x - 3)(x - \alpha)$$

$$f(2) = a(\alpha - 2)$$

$$f(-1) = 4a(1 + \alpha)$$

$$\text{Given } f(-1) + f(2) = 0$$

$$\Rightarrow a(\alpha - 2 + 4 + 4\alpha) = 0$$

$$\Rightarrow 5\alpha = -2 \quad \text{As } a \neq 0$$

$$\Rightarrow \alpha = -25 = -0.4$$

$$\therefore \alpha \in (-1, 0)$$