

Q) The value of λ such that sum of the squares of the roots of the quadratic equation,

$x^2 + (3 - \lambda)x + 2 = \lambda$ has the least value is –

- A) 1
- B) 2
- C) 15/8
- D) 4/9

Solution:

$$\alpha + \beta = \lambda - 3$$

$$\alpha\beta = 2 - \lambda$$

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta = (\lambda - 3)^2 - 2(2 - \lambda)$$

$$= \lambda^2 + 9 - 6\lambda - 4 + 2\lambda$$

$$= \lambda^2 - 4\lambda + 5$$

$$= (\lambda - 2)^2 + 1$$

$$\therefore \lambda = 2$$