

3. For the equation $3x^2 + px + 3 = 0$, $p > 0$ if one of the root is square of the other, then p is equal to [2005]

- (a) $1/3$ (b) 1 (c) 3 (d) $2/3$

Solution: (c)

Let α, α^2 be the roots of $3x^2 + px + 3 = 0$

$$\therefore \alpha + \alpha^2 = -p/3 \text{ and } \alpha^3 = 1$$

$$\Rightarrow (\alpha - 1)(\alpha^2 + \alpha + 1) = 0 \Rightarrow \alpha = 1 \text{ or } \alpha^2 + \alpha = -1.$$

If $\alpha = 1$, then $p = -6$ which is not possible, as $p > 0$.

$$\text{If } \alpha^2 + \alpha = -1. \Rightarrow -p/3 = -1 \Rightarrow p = \boxed{3}.$$