

- Let α, β be the roots of $x^2 + (3 - \lambda)x - \lambda = 0$. The value of λ for which $\alpha^2 + \beta^2$ is minimum, is -
 (1) 0 (2) 1
 (3) 2 (4) 3
- A value of b for which the equations $x^2 + bx - 1 = 0$ and $x^2 + x + b = 0$ have one root in common is?
 (1) $-\sqrt{2}$ (2) $-i\sqrt{3}$
 (3) $-i\sqrt{5}$ (4) $\sqrt{2}$
- If the equations $2x^2 - 7x + 1 = 0$ and $ax^2 + bx + 2 = 0$ have a common root, a, b are rational numbers, then which of the following can be true
 (1) $a = 2, b = -7$ (2) $a = -\frac{7}{2}, b = 1$
 (3) $a = 4, b = -14$ (4) $a = -4, b = 1$
- If the roots of the equation $x^3 - 12x^2 + 39x - 28 = 0$ are in A.P. then their common difference is
 (1) ± 3 (2) ± 4
 (3) ± 5 (4) None of these
- The equation $e^{\sin x} - e^{-\sin x} - 4 = 0$ has
 (1) Exactly one real root. (2) Exactly four real roots.
 (3) Infinite number of real roots. (4) No real roots.
- If x is rational and $4\left(x^2 + \frac{1}{x^2}\right) + 16\left(x + \frac{1}{x}\right) - 57 = 0$, then the product of all possible values of x is
 (1) 4 (2) 3
 (3) 2 (4) 1
- If α, β, γ are roots of $x^3 - 5x + 4 = 0$ then $(\alpha^3 + \beta^3 + \gamma^3)^2 =$
 (1) 12 (2) 13
 (3) 169 (4) 144
- If α, β, γ are the roots of the equation $2x^3 - 3x^2 + 6x + 1 = 0$, then $\alpha^2 + \beta^2 + \gamma^2$ is equal to:
 (1) $-\frac{15}{4}$ (2) $\frac{15}{4}$
 (3) $\frac{9}{4}$ (4) 4
- The number of real roots of the equation, $e^{4x} + e^{3x} - 4e^{2x} + e^x + 1 = 0$ is:
 (1) 1 (2) 3
 (3) 2 (4) 4
- If the values of x satisfying the equation $(7 + 4\sqrt{3})^{x^2 - 4x + 3} + (7 - 4\sqrt{3})^{x^2 - 4x + 3} = 14$ are α, β, γ ; then find $\alpha + \beta + \gamma$