1. Let $\alpha,\ \beta$ 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

2. 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) $\sqrt{2}$

3. 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) $a=-4,\ b=1$

4. 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

5. 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.

6. 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

7. If $\alpha,\ \beta,\ \gamma$ are roots of $x^3-5x+4=0$ then $\left(\alpha^3+\beta^3+y^3\right)^2=$

(1) 12 (2) 13

(3) 169 (4) 144

8. If $\alpha,\ \beta,\ \gamma$ 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

9. 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

10. If the values of x satisfying the equation $\left(7+4\sqrt{3}\right)^{x^2-4x+3}+\left(7-4\sqrt{3}\right)^{x^2-4x+3}=14$ are $\alpha,\ \beta,\ \gamma$; then find $\alpha+\beta+\gamma$