3_B_Mains

ai24btech11020 - Rishika Kotha

24) The equation $e^{\sin x}$-$e^{-\sin x}$-4=0 has: **[2012]**

a. infinite number of real roots
b. no real roots
c. exactly one real root
d. exactly four roots

25) The real number k for which the equation, $2x^3 + 3x + 4 = 0$ has two distinct real roots in [0,1] **[JEE M 2013]**

a. lies between 1 and 2
b. lies between 2 and 3
c. lies between -1 and 0
d. does not exist.

26) The number of values of k, for which the system of equations: **[JEE M 2013]**
(k+1)x+8y=4k
kx+(k+3)y=3k-1
has no solution, is

a. infinite
b. 1
c. 2
d. 3

27) If the equations $x^2 + 2x + 3 = 0$ and $ax^2 + bx + c = 0$,a,b,c∈ R , have a common root , then a:b:c is **[JEE M 2013]**

a. 1:2:3
b. 3:2:1
c. 1:3:2
d. 3:1:2

28) If a ∈ R and the equation $-3(x - [x])^2 + 2(x - [x]) + a^2 = 0$ (where [x] denotes the greatest integer ≤ x) has no integral solution, then all possible values of a lie in the interval: **[JEE M 2014]**

a. (-2,-1)
b. $(-\infty, 2) \cup (2, \infty)$
c. $(-1, 0) \cup (0, 1)$
d. (1,2)

29) Let α and β be the roots of equation $px^2 + qx + r = 0$, $p \neq 0$. If p,q,r are in A.P. and $\frac{1}{\alpha} + \frac{1}{\beta} = 4$, then the value of $|\alpha - \beta|$ is **[JEE M 2014]**

a. $\frac{\sqrt{34}}{9}$
b. $\frac{2\sqrt{13}}{9}$
c. $\frac{\sqrt{61}}{9}$
d. $\frac{2\sqrt{17}}{9}$

30) Let α and β be the roots of the equation $x^2 - 6x - 2 = 0$. If $a_n = \alpha^n - \beta^n$, for $n \geq 1$, then the value of $\frac{a_{10} - 2a_8}{2a_9}$ is equal to: **[JEE M 2015]**

a. 3
b. -3
c. 6
d. -6

31) The sum of all real values of x satisfying the equation $(x^2 - 5x + 5)^{x^2+4x+60} = 1$ is : **[JEE M 2016]**

a. 6
b. 5
c. 3
d. -4

32) If $\alpha, \beta \in C$ are the distinct roots, of the equation $x^2 - x + 1 = 0$, then $\alpha^{101} + \beta^{107}$ is equal to : **[JEE M 2018]**

a. 0
b. 1
c. 2
d. -1

33) Let p,q∈ R. If $2 - \sqrt{3}$ is a root of the quadratic equation, $x^2 + px + q = 0$,then: **[JEE M 2019-9 April(M)]**

a. $p^2 - 4q + 12 = 0$
b. $q^2 - 4p - 16 = 0$
c. $q^2 + 4p + 14 = 0$
d. $p^2 - 4q - 12 = 0$