JEE MAIN 2025

PAPER DISCUSSION

Sub : Mathematics
Attempt : 01
Date : 29th Jan 2025
Shift : 02

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If the letters of the word "KANPUR" are arranged in dictionary, then the 440^{th} word is

A PRKAUN

B PRKUAN

C PRKNAU

D PRKUNA

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If 3^{107} is divided by 23, then remainder is

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Let $a_{ij} = (\sqrt{2})^{i+j}, A = [a_{ij}]_{3\times3}$. If sum of third row of A^2 is $\alpha + \beta\sqrt{2}$, then $\alpha + \beta$ is

A 2 × 2 matrix form by elements {0, 1} and random variable x be defined as value of determinate, then the variance is

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Let the area bounded by the curves $|y| = 1 - x^2$, $x^2 + y^2 = 1$ is α. If $9\alpha = 8\beta\pi + \gamma$ then find $|\beta - \gamma|$.

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Let $f(x) = \int_0^x t(t^2 - 3t + 20)\,dt$, $x \in (1, 3)$ and range of $f(x)$ is (α, β), then $\alpha + \beta$ is equal to

A $\frac{185}{4}$

B $\frac{185}{2}$

C $\frac{185}{3}$

D $\frac{37}{4}$

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The value of the limit $\lim\limits_{x\to 0}(\operatorname{cosec} x)\left(\sqrt{2\cos^2 x+3\cos x}-\sqrt{\cos^2 x+\sin x+4}\right)$ is

A 0

B 1

C $\dfrac{1}{2\sqrt{5}}$

D $-\dfrac{1}{2\sqrt{5}}$

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$a_1, a_2, a_3, \ldots\ldots, a_{2024}$ are in A.P. and $a_1 + (a_5 + a_{10} + a_{15} + \ldots\ldots + a_{2020}) + a_{2024} = 2233$ then $a_1 + a_3 + a_3 + \ldots\ldots + a_{2024} = ?$

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Let the line L be $\frac{x-1}{1}=\frac{y-4}{3}=\frac{z-7}{5}$ and foot of perpendicular from $(1,-2,-1)$ to L is (α,β,γ), then $\alpha+\beta+\gamma$ is

A $-\frac{19}{35}$

B $\frac{102}{35}$

C $\frac{69}{35}$

D $-\frac{102}{35}$

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If the exhaustive values of a for which the equation $2x^2 + (a-5)x + 15 = 3a$ has no real roots is (α, β) then $|4(\alpha+\beta)|$ is equal to

A 56

B 52

C 54

D 18

If $x + y + z = 1$; $x + 2y + 4z = m$ & $x + 4y + 10z = m^2$ have infinitely many solutions and m takes 2 values α & β then find

$$\sum_{r=1}^{10} (r)^{\alpha} + (r)^{\beta}$$

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If $\log y = x \log \frac{2}{5}, x \in \mathbb{N} \cup \{0\}$. Then sum of all values of y equals to

A $\frac{5}{3}$

B $\frac{2}{3}$

C $\frac{5}{4}$

D $\frac{8}{3}$

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Two points (4, 2) and (0, 2) lie on the circle whose centre lies on $3x + 2y + 2 = 0$, then length of chord whose mid-point is (1, 2), is

A $\sqrt{3}$

B $\sqrt{5}$

C $2\sqrt{3}$

D $2\sqrt{5}$

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Thank

YOU