JEE-Main-07-04-2025 (Memory Based)

[EVENING SHIFT]

Maths

Question: If x|x - 3| + 3|x - 2| + 1 = 0, then he number of real solution is

Options:

(a) 2

(b) 4

(c) 1

(d) 6

Answer: (1)

Question: Re $\left(\frac{2z+i}{z+i}\right)+\text{Re}\left(\frac{2\bar{z}-i}{\bar{z}-i}\right)=2$ **is a circle of radius r and centre (a, b), then** $\frac{15ab}{r^2}$ **is equal to**

Answer: (0)

Question: If two vectors $\vec{a}$ and $\vec{b}$ **satisfies** $\frac{|\vec{a}+\vec{b}|+|\vec{a}-\vec{b}|}{|\vec{a}+\vec{b}|-|\vec{a}-\vec{b}|}=\sqrt{2}+1,$ **then the value of** $\frac{|\vec{a}+\vec{b}|^2}{|\vec{a}-\vec{b}|^2}$ **is equal to**

Options:

(a) $1+\sqrt{2}$

(b) $2+4\sqrt{2}$

(c) $1+2\sqrt{2}$

(d) $3+2\sqrt{2}$

Answer: (d)

Question: Let $f(x)=\frac{x-5}{x^2-3x+2}$ **is range of f(x) is** $(-\infty, \alpha) \cup (\beta, \infty)$**. Then** $\alpha^2+\beta^2$ **equals to**

Answer: (194)

Question: If a box contains 19 unbiased coins and 1 biased coin with both faces head. If a coin is randomly chosen out of this box and tossed. If the head appears, then the probability that the unbiased coin was selected

Options:

(a) $\frac{19}{21}$

(b) $\frac{1}{3}$

(c) $\frac{1}{5}$

(d) $\frac{1}{6}$

Answer: (a)

Question: If $f(\theta) = \frac{\tan(\tan\theta) - \tan(\sin\theta)}{\tan\theta - \sin\theta}$ **is continuous at** $\theta = 0$**, then the value of f(**θ**) at** $\theta = 0$ **is equal to**

Answer: (1)

Question: Let a random variable X take values 0, 1, 2, 3 with P(x = 0) = P(x = 1) = P. P(x = 2) = P(x = 3) and E(X²) = 2E(x). Then the value of 8p - 1 is

Answer: (2)

Question: Let an be the nth term of an A.P. If $S_n = a_1 + a_2 + a_3 + \ldots + an = 700$, $a_6 = 7$ and $S_7 = 7$, then an is equal to

Answer: (64)

Question: Let $\vec{a}$ and $\vec{b}$ **be the vectors of the same magnitude such that** $\frac{|\vec{a}+\vec{b}| + |\vec{a}-\vec{b}|}{|\vec{a}+\vec{b}| - |\vec{a}-\vec{b}|} = \sqrt{2}+1,$ **Then** $\frac{|\vec{a}+\vec{b}|^2}{|\vec{a}-\vec{b}|^2}$ **is**

Answer: 2(1 + cos θ**)**

Question: Let y = y(x) and (1 + x²) y' - 2xy = (x⁴ + 2x² + 1) cosx. If y(0) = 1, then $\int_{-3}^{3} y(x)dx$ **equals to**

Options:

(a) 20

(b) 15

(c) 24

(d) 10

Answer: (c)

Question: Let the length of a latus rectum of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ **be 10. If its eccentricity is the minimum value of the function** $f(t) = t^2 + t + \frac{11}{12}$, **t** $\in$ **R, then a² + b² is equal to**

Answer: (126)

Question: If a triangle is formed using lines y = x + 1, y = 4x - 8, y = mx + c. If the orthocentre of this triangle is (3, -1), then m - c is equal to

Options:

(a) 0

(b) 1

(c) -1

(d) 2

Answer: (a)

Question: Let the foot of perpendicular from P(5, 1, -3) on the line L_1 : x - 1 = y - 2 = z and L_2 : x - 2 = y = z - 1 is Q and R, respectively. The area of triangle PQR is equal to (in square units)

Options:

(a) $\frac{7}{2}$

(b) $\frac{7}{\sqrt{2}}$

(c) $\frac{7\sqrt{3}}{2}$

(d) 7

Answer: (c)