JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1

MEMORY BASED

Ques No.	Question
1 - 9364307	**JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1 - MEMORY BASED - MATHS** The sum of coefficient of even powers of x in $\left(x+\sqrt{x^3-1}\right)^6+\left(x-\sqrt{x^3-1}\right)^6$ is: (A) 23 (B) 24 (C) 18 (D) 21
2 - 9364308	**JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1 - MEMORY BASED - MATHS** Let $\sin(\alpha-\beta)=\frac{5}{13}$ and $\cos(\alpha+\beta)=\frac{3}{5}$, then $\tan(2\alpha)$ is equal to (Here $\alpha,\beta\in\left(0,\frac{\pi}{4}\right)$) (A) $\frac{63}{16}$ (B) $\frac{61}{16}$ (C) $\frac{65}{16}$ (D) $\frac{32}{9}$

3 - 9364310

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The line $x + y = n, n \in I$ makes intercepts with $x^2 + y^2 = 16$. Then the sum of square of all possible intercepts. (A) 242 (B) 105 (C) 210 (D) 484

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4 - 9364311

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$\int \frac{\sin\left(\frac{5x}{2}\right)}{\sin\left(\frac{x}{2}\right)} dx$ is euqal to (A) $x + 2\sin x + \sin 2x + C$ (B) $x + 2\cos x + \sin 2x + C$ (C) $x - 2\sin x + \sin 2x + C$ (D) $x + 2\sin x - \sin 2x + C$

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The area bounded by the curve

$y \leq x^2 + 3x, 0 \leq y \leq 4, 0 \leq x \leq 3$, is (A) $\frac{59}{6}$ (B) $\frac{57}{4}$ (C) $\frac{59}{3}$ (D) $\frac{57}{6}$

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6 - 9364313

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\'If you are born in India then you are citizen of India\'\' contrapositive of this statement is (A) If you are born in India then you are not citizen of India (B) If you are not citizen of India then you are not born in India (C) If you are citizen of India then you are not born in India (D) If you are citizen of India then you are born in India

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7 - 9364315

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Let $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ and $A^{32} = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ (A) 0 (B) $\frac{\pi}{32}$ (C) $\frac{\pi}{64}$ (D) $\frac{\pi}{16}$

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8 - 9364317

Shortest distance between the curve $y^2 = x - 2$ and $y = x$ is (A) greater than 4 (B) less than 2 (C) greater than 3 (D) greater than 2

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9 - 9364318

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$$\lim_{x \to 0} \frac{\sin^2 x}{\sqrt{2} - \sqrt{1 + \cos x}} = \text{(A) } \sqrt{2} \text{ (B) 2 (C) 4 (D) } 4\sqrt{2}$$

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10 - 9364320

How many 9 digit no. can be formed using the digit $1, 1, 2, 2, 2, 2, 3, 4, 4$ such that code no. occures at even palces (A) 160 (B) 175 (C) 180 (D) 220

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11 - 9364321

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let $g(x) = \ln x$ and $f(x) = \left(\frac{1 - x\cos x}{1 + x\cos x}\right)$ then $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} g(f(x))dx$ is equal to (A) $\ln 1$ (B) $\ln 2$ (C) $\ln e$ (D) $\ln 4$

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12 - 9364322

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let $2. .^{20} C_0 + 5.^{20} C_1 + 8.^{20} C_2 + ?. + 62.^{20} C_{20}.$ Then sum of this series is (A) 16.2^{22} (B) 8.2^{21} (C) 8.2^{21} (D) 16.2^{21}

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13 - 9364323

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Sum of the natural number between 100 and 200 whose HCF with 91 should be more than (A) 1121 (B) 3210 (C) 3121 (D) 1520

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14 - 9364324

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If mean and variance of 7 variates are 8 and 16 respectively and five of them are 2,4,10,12,14 then find the product of remaining two variates (A) 49 (B) 48 (C) 45 (D) 40

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15 - 9364325

If α and β are the roots of $x^2 - 2x + 2 = 0$ then find minimum value of n such that $\left(\frac{\alpha}{\beta}\right)^n = 1$ (A) 4 (B) 3 (C) 2 (D) 5

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16 - 9364326

	JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1 - MEMORY BASED - MATHS Solution of differential equation $\left(x^2+1\right)^2\frac{dy}{dx}+2x\left(x^2+1\right)y=1$ is (A) $y=\frac{\tan^{-1}}{x^2+1}+C$ (B) $y=\tan^{-1}x+C$ (C) $y\left(x^2+1\right)=\tan^{-1}x+C$ (D) $y\left(\tan^{-1}x\right)=x^2+C$ Watch Free Video Solution on Doubtnut
17 - 9364327	**JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1 - MEMORY BASED - MATHS** if $f(x)=\log_2\left(\frac{1-x}{1+x}\right)$ then $f\left(\frac{2x}{1+x^2}\right)$ is equal to (A) $f(x)$ (B) $2f(x)$ (C) $-2f(x)$ (D) $\left(f(x)\right)^2$ Watch Free Video Solution on Doubtnut
18 - 9364328	**JEE MAINS 08 APRIL 2019 - PAPER 1 SHIFT 1 - MEMORY BASED - MATHS** Given that $A\subset B$ then identify the correct statement (A)

$P(A/B) = (A)$ (B) $P(A/B) \leq P(A)$ (C) $P(A/B) \geq P(A)$ (D) $P(A/B) = P(A) - P(B)$

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19 - 9364329

Find the value of c for which the following equations have non trivial solutions $cx - y - z = 0$ $-cx + y - cz = 0$ $x + y - cz = 0$ (A) $\frac{1}{2}$ (B) -1 (C) 2 (D) 0

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20 - 9364330

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Let $2y = \left\{ \frac{\cot^{-1}\left(\sqrt{3}\cos x - \sin x\right)}{\cos x + \sqrt{3}\sin x} \right\}^2$ then $\frac{dy}{dx}$ is equal to (A) $x - \frac{\pi}{6}$ (B) $x + \frac{\pi}{6}$ (C) $2x - \frac{\pi}{6}$ (D) $2x - \frac{\pi}{3}$

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21 - 9364332

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Let S_1 is set of minima and S_2 is set of maxima for the curve $y = 9x^4 + 12x^3 - 36x^2 - 25$ then (A) $S_1 = \{-2, -1\}, S_2 = \{0\}$ (B) $S_1\{-2, 1\}, S_2 = \{0\}$ (C) $S_1 = \{-2, 1\} : S_2 = \{-1\}$ (D) $S_1 = \{-2, 2\}, S_2 = \{0\}$

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22 - 9364333

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Let $f''(x) > 0$ and $\phi(x) = f(x) + f(2 - x), x \in (0, 2)$ be a function then the function $\phi(x)$ is (A) increasing in (0,1) and decreasing (1,2) (B) decreasing in (0, 1) and increasing (1,2) (C) increasing in (0, 2) (D) decreasing in (0,2)

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23 - 9364334

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Let vertices of the triangle ABC is $A(0,0), B(0,1)$ and $C(x,y)$ and perimeter is 4 then the locus of C is : (A) $9x^2+8y^2+8y=16$ (B) $8x^2+9y^2+9y=16$ (C) $9x^2+8y^2+8y=16$ (D) $8x^2+9y^2-9x=16$

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24 - 9364336

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Let the equation of a line is $3x+5y=15$ and a point P on

this line is equidistant from x and y axis. In which quadrant the point P lies? (A) 1^{st} (B) 3^{rd} (C) 4^{th} (D) none of these

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25 - 9364337

The perpendicular distance of point $(2, -1, 4)$ from the line $\frac{x+3}{10} = \frac{y-2}{-7} = \frac{z}{1}$ lies between (A) (2,3) (B) (3,4) (C) (4,5) (D) (1,2)

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26 - 9364338

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If a plane passes through intersection of planes $2x - y - 4 = 0$ and $y + 2z = 4 = 0$ and alos passes through the point $(1, 1, 0)$ then the equation plane is (A) $x - y - z = 0$ (B) $2x - z = 0$ (C) $x + 2z - 1 = 0$ (D) $x - z - 1 = 0$

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27 - 9364339

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if $\left|\sqrt{x}-2\right|+\sqrt{x}\left(\sqrt{x}-4\right)=2$ then find the sum of roots of equation (A) 12 (B) 8 (C) 4 (D) 16

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28 - 9364340

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Find the magnitude of projection of vector $2i+3j+k$, on a vactor which is perpendicular to the plane containing vectors $i+j+k$ and $i+2j+3k$ (A) $\frac{\sqrt{3}}{\sqrt{2}}$ (B) $\frac{\sqrt{2}}{\sqrt{3}}$ (C) $\frac{4}{\sqrt{3}}$ (D) $\frac{2\sqrt{2}}{\sqrt{3}}$

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