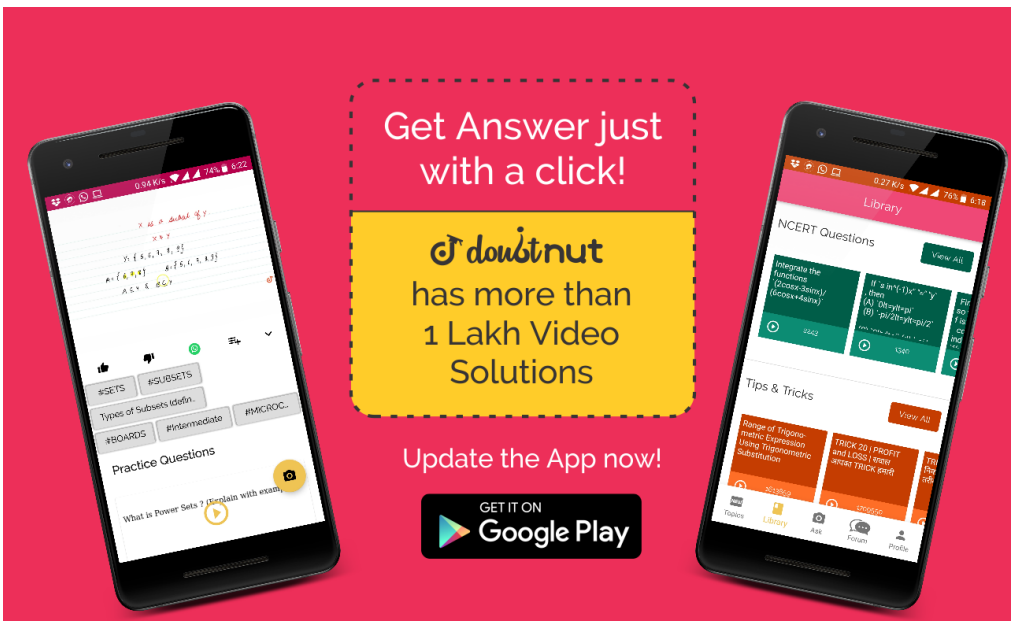
JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2

ACTUAL PAPER

Ques No.	Question
1 - 6015001	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Find sum of first 15 term of series $1+6+\frac{9(1^2+2^2+3^2)}{7}+\frac{12(1^2+2^2+3^2+4^2)}{9}+.....$ (1) 7620 (2) 7280 (3) 7820 (4) 7067 Watch Free Video Solution on Doubtnut
2 - 6015002	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Find the value of $\lim_{x\to 0}\frac{x(([x]+\lvert x\rvert)\sin[x])}{\lvert x\rvert}$. (a) $\sin 1$ (b) $\sin 1$ (c) 0 (d) 1 Watch Free Video Solution on Doubtnut
3 - 6015003	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Let $y=y(x)$ is a solution of $\frac{dy}{dx}=f(x)$ where $f(xy)=f(x)f(y)\forall x,y\in R$ and $f(0)\neq 0$ and $y(0)=\frac{1}{2}$, then $y\left(\frac{1}{4}\right)+y\left(\frac{3}{4}\right)$ is equal to (1)1 (2)2 (3) 3 (4) 4 Watch Free Video Solution on Doubtnut
	
4 - 6015004	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** If $x=\sin^{-1}(\sin 10)$ and $y=\cos^{-1}(\cos 10)$, then the value of $(y-x)$ is (a) π (b) 7π (c) 0 (d) 10

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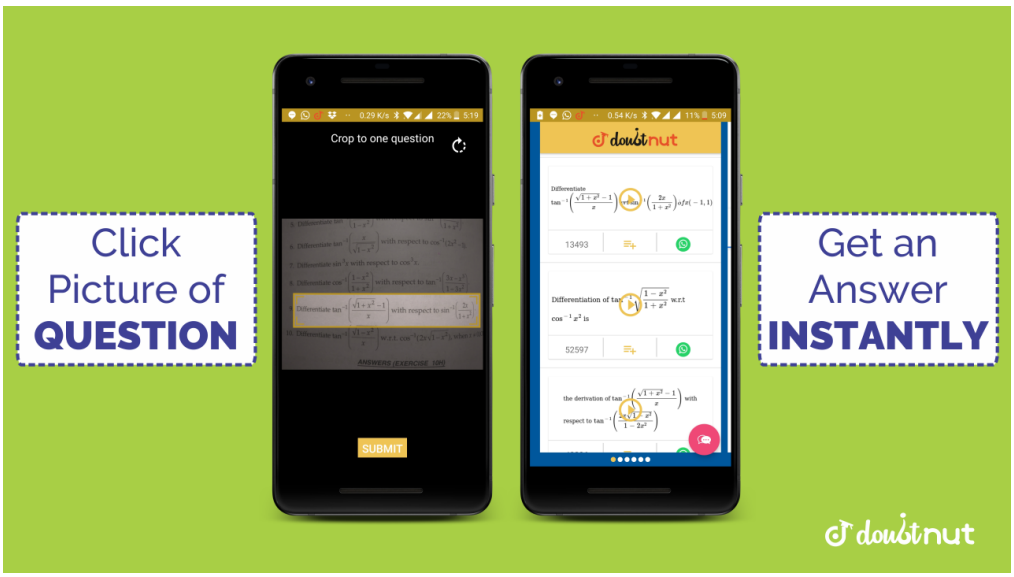
5 - 6015005	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Find number of solution of equation $\sin x - \sin 2x + \sin 3x = 0$ in $0 \leq x \leq \frac{\pi}{2}$ (a) 2 (b) 3 (c) 4 (d) 5 Watch Free Video Solution on Doubtnut
6 - 6015006	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Let Z_0 is the root of equation $x^2 + x + 1 = 0$ and $Z = 3 + 6i(Z_0)^{81} - 3i(Z_0)^{93}$ Then arg (Z) is equal to (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$ (c) π (d) $\frac{\pi}{6}$ Watch Free Video Solution on Doubtnut
7 - 6015007	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Find area enclosed by curve $0 \leq y \leq x\|x\| + 1$ between $-1 \leq x \leq 1$ (a) 2 (b) $\frac{4}{3}$ (c) $\frac{1}{3}$ (d) 3 Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
8 - 6005798	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** If the system of linear equations $x - 4y + 7z = g$, $3y - 5z = h$, $-2x + 5y - 9z = k$ is consistent, then (a) $g + 2h + k = 0$ (b) $g + h + 2k = 0$ (c) $2g + h + k = 0$ (d) $g + h + k = 0$ Watch Free Video Solution on Doubtnut
9 - 6015008	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** The coefficient of t^4 in $\left(\frac{1 - t^6}{1 - t}\right)^3$ (a) 18 (b) 12 (c) 9 (d) 15 Watch Free Video Solution on Doubtnut
10 - 6015009	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER**

Let real and distinct roots of equation $x^2 - mx + 4 = 0$ lies in $[1, 5]$ then range of m is (a) $(3, 4)$ (b) $(4, 5)$ (c) $(-5, -4)$ (d) $(-3, 4)$

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11 - 6015010

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If S is a set of triangles whose one vertex is origin and other two vertices are integral coordinates and lies on coordinate axis of area 50 square units, then number of elements in set S is equal to (a) 9 (b) 18 (c) 36 (d) 40

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12 - 6015011

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Let a, b, c are 7th, 11th and 13th terms of constant $A.P$ if a,b,c are also is G.P then find $\frac{a}{c}$ (a) 1 (b) 2 (c) 3 (d) 4

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13 - 6005942

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The logical statement $[\sim(\sim p \vee q) \vee (p \wedge r)] \wedge (\sim q \wedge r)$ is equivalent to (a) $(\sim p \wedge \sim q) \wedge r$ (b) $\sim p \vee r$ (c) $(p \wedge r) \wedge \sim q$ (d) $(p \wedge \sim q) \vee r$

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14 - 6006056

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Equation of the plane containing the straight line $\frac{x}{2} = \frac{y}{3} = \frac{z}{4}$ and perpendicular to the plane containing the straight lines $\frac{x}{2} = \frac{y}{4} = \frac{z}{2}$ and $\frac{x}{4} = \frac{y}{2} = \frac{z}{3}$ is

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15 - 6015012

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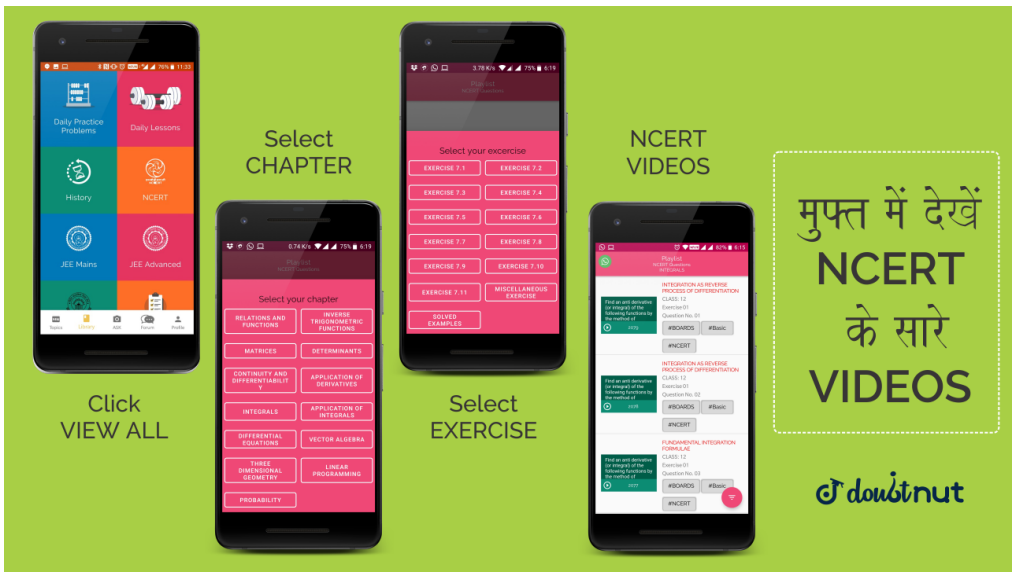
If $\sum_{i=1}^{n} (x_i + 1)^2 = 9n$ and $\sum_{i=1}^{n} (x_i - 1)^2 = 5n$, then standard deviation of these 'n' observations

	(x_1) is: (1) $2\sqrt{3}$ (2) $\sqrt{3}$ (3) $\sqrt{5}$ (4) $3\sqrt{2}$ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
16 - 6015013	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** Matrix $\begin{bmatrix} e^t & e^{-t}(\sin t - 2\cos t) & e^{-t}(-2\sin t - \cos t) \\ e^t & -e^{-t}(2\sin t + \cos t) & e^{-t}(\sin t - 2\cos t) \\ e^t & e^{-t}\cos t & e^{-t}\sin t \end{bmatrix}$ is invertible. (1) only id $t = \frac{\pi}{2}$ (2) only $y = \pi$ (3) $t \in R$ (4) $t \notin R$ Watch Free Video Solution on Doubtnut
17 - 6015014	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** $\int \frac{5x^8 + 7x^6}{x^2 + 1 + 2x^7} dx$ is equal to (a) $\frac{x}{x^2 + 1 + 2x^7} + C$ (b) $\frac{x^7}{x^2 + 1 + 2x^7} + C$ (c) $\frac{x^6}{x^2 + 1 + 2x^7} + C$ (d) $\frac{x^2}{x^2 + 1 + 2x^7} + C$ Watch Free Video Solution on Doubtnut
18 - 6015015	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** If $\lvert f(x) - f(y) \rvert \leq 2\lvert x - y \rvert^{\frac{3}{2}}$ $\forall x, y \in R$ and $f(0) = 1$ then value of $\int_0^1 f^2(x)dx$ is equal to (a) 1 (b) 2 (c) $\sqrt{2}$ (d) 4 Watch Free Video Solution on Doubtnut
19 - 6015016	**JEE MAINS 09 JAN 2019 - PAPER 1 SHIFT 2 - ACTUAL PAPER** If $x = 3\tan t$ and $y = 3\sec t$ then find $\frac{d^2y}{dx^2}$ at $x = \frac{\pi}{4}$ (a) 3 (b) $\frac{1}{6\sqrt{2}}$ (c) 1 (d) $\frac{1}{6}$ Watch Free Video Solution on Doubtnut

20 - 6015017

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Number of natural number\'s less than 7000 using digit $0, 1, 3, 7, 9$ (repetition allowed) is- (a) 275 (b) 275 (c) 274 (d) 374

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21 - 6015018

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If the circles $x^2 + y^2 - 16x - 20y + 164 = r^2$ and $(x-4)^2 + (y-7)^2 = 36$ intersect at two points then (a) $1 < r < 11$ (b) $r = 11$ (c) $r > 11$ (d) $0 < r < 1$

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22 - 6015019

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Find the eccetricity of hyperbola through $(4, 2)$ whose centre is $(0, 0)$ length of transverse axis is 4 and transverse axis along x-axis. (1) 2 (2) $\sqrt{3}$ (3) $\frac{\sqrt{3}}{2}$ (4) $\frac{2}{\sqrt{3}}$

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23 - 6015020

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If $A(4, -4)$ and $B(9, 6)$ lies on $y^2 = 4x$ and a point C on arc AOB(O=origin) such that the area of $\triangle ACB$ is maximum then point c is (1) $\left(\frac{1}{4}, 1\right)$ (2) $\left(1, \frac{1}{4}\right)$ (3) $\left(1, \frac{1}{2}\right)$ (4) $\left(\frac{1}{2}, 1\right)$

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24 - 6015021

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Let equation of two sides of a triangle are $4x+5y=20$ and $3x-2y+6=0$ If orthocentre of triangle is $(1,1)$ then the equation of third side of triangle is (a) $y+10=\frac{-13}{61}\left(x+\frac{35}{2}\right)$ (2) $y+10=\frac{-13}{61}\left(x-\frac{35}{2}\right)$ (3) $y+10=\frac{13}{61}\left(x-\frac{35}{2}\right)$ (4) $y-10=\frac{13}{61}\left(x-\frac{35}{2}\right)$

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25 - 6015022

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An urn contains 5 red and 2 green balls, one ball is chosen from urn. If it is red then a green ball is put back into Box, and if it green then a red ball is put in to box (previous ball was not put in that box). Then a second ball is drawn the probebility that it is red ball is (a) $\frac{32}{49}$ (b) $\frac{17}{49}$ (c) $\frac{15}{49}$ (d) $\frac{36}{49}$

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26 - 6015023

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Two lines in 3-D are $x=ay+b$,$z=cy+d$ and $x=a'z+b'$,$y=c'x+d'$ are perpendicular to each other then which of the following condition is true? (a) $aa'+c+c'=0$ (b) $cc'+a+a'=0$ (c) $aa'+cc'=0$ (d) $aa'+cc'+1=0$

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27 - 6015024

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let $\vec{a}=\hat{i}_{+}\hat{j}+\sqrt{2}\hat{k}$ $\vec{b}=b_1\hat{i}+b_2\hat{J}+\sqrt{2}\hat{k}$ $\vec{c}=5\hat{i}+\hat{j}+\sqrt{2}\hat{k}$ & $\left(\vec{a}+\vec{b}\right)$ is perpendicular to $\vec{c}$ and projection vector of $\vec{b}$ on $\vec{a}$ is $\vec{a}$ then find $\left|\vec{b}\right|$ (a) 6 (b) $\sqrt{22}$ (c) $\sqrt{32}$ (d) 11

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28 - 6006132

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The number of all possible positive integral values of α for which the roots of the quadratic equation $6x^2 - 11x + \alpha = 0$ are rational numbers is : (a) 3 (b) 2 (c) 4 (d) 5

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29 - 6015025

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Let $A = \{x : x\varepsilon R - \}f$ is defined from $A \to R$ as $f(x) = \dfrac{2x}{x-1}$ then $f(x)$ is (a) Surjective but nor injective (b) injective but nor surjective (c) neither injective surjective (d) injective

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30 - 6015026

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$\displaystyle\int_0^{\frac{\pi}{3}} \frac{\tan x}{\sqrt{2k \sec x}} dx = 1 - \frac{1}{\sqrt{2}}$, then value of k is (a) 2 (b) 1 (c) $\dfrac{1}{2}$ (d) $\dfrac{1}{4}$

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