पढ़ना हुआ आसान

Ques No.	Question
1	**JEE MAINS MATHS SOLUTIONS - 2008** AB is a vertical pole with B at the ground level and A at the top. A man finds that the angle of elevation of the point A from a certain point C on the ground is $60o$. He moves away from the pole along the line BC to a point D such that $CD = 7m$. From D the angle of elevation of the point A is $45o$. Then the height of the pole is (1) $\frac{7\sqrt{3}}{2}\frac{1}{\sqrt{3}-1}m$ (2) $\frac{7\sqrt{3}}{2}\sqrt{3}+1m$ (3) $\frac{7\sqrt{3}}{2}\sqrt{3}-1m$ (4) $\frac{7\sqrt{3}}{2}\frac{1}{\sqrt{3}+1}m$ Watch Free Video Solution on Doubtnut
2	**JEE MAINS MATHS SOLUTIONS - 2008** It is given that the events A and B are such that $P(A) = \frac{1}{4}, P\left(\frac{A}{B}\right) = \frac{1}{2} \text{and} p\left(\frac{B}{A}\right) = \frac{2}{3}$. $P(A) = \frac{1}{4}, P\left(\frac{A}{B}\right)$ $= \frac{1}{2} \text{and} p\left(\frac{B}{A}\right)$ $= \frac{2}{3}$. Then P(B) is: (1) $\frac{1}{6}$ (2) $\frac{1}{3}$ (3) $\frac{2}{3}$ (4) $\frac{1}{2}$ Watch Free Video Solution on Doubtnut
3	**JEE MAINS MATHS SOLUTIONS - 2008** A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then $P(A \cup B)$ is (1) $\frac{3}{5}$ (2) 0 (3) 1 (4) $\frac{2}{5}$ Watch Free Video Solution on Doubtnut

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A focus of an ellipse is at the origin. The directrix is the line $x = 4$ and the eccentricity is 1/2. Then the length of the semimajor axis is (1) $\frac{8}{3}$ (2) $\frac{2}{3}$ (3) $\frac{4}{3}$ (4) $\frac{5}{3}$

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A parabola has the origin as its focus and the line $x = 2$ as the directrix. Then the vertex of the parabola is at (1) (0, 2) (2) (1, 0) (3) (0, 1) (4) (2, 0)

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The point diametrically opposite to the point P (1, 0) on the circle $x^2 + y^2 + 2x + 4y - 3 = 0$
$x^2 + y^2 + 2x + 4y$
$- 3 = 0$
is (1) $(3, -4)$ (2) $(-3, 4)$ (3) $(-3, -4)$ (4) $(3, 4)$

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Let $f: N \rightarrow Y$ be a function defined as $f(x) = 4x + 3$, where $Y = \{y \in N : y = 4x + 3$
$Y = \{y \in N : y$
$= 4x + 3$
for some $x \in N\}$. Show that f is invertible and its inverse is (1) $g(y) = \frac{3y + 4}{3}$ (2) $g(y) = 4 + \frac{y + 3}{4}$ (3) $g(y) = \frac{y + 3}{4}$ (4) $g(y) = \frac{y - 3}{4}$

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The conjugate of a complex number is $\frac{1}{i-1}$. Then the complex number is (1) $\frac{-1}{i-1}$ (2) $\frac{1}{i+1}$ (3) $\frac{-1}{i+1}$ (4) $\frac{1}{i-1}$

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Let R be the real line. Consider the following subsets of the plane $R \times R$. $S = \{(x, y): y = x +$
$S = \{(x, y): y = x$
$+ 1 and 0 < x$
$< 2\}, T = \{(x, y)$
$: x - y$
is an integer }. Which one of the following is true? (1) neither S nor T is an equivalence relation on R (2) both S and T are equivalence relations on R (3) S is an equivalence relation on R but T is not (4) T is an equivalence relation on R but S is not

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The perpendicular bisector of the line segment joining P (1, 4) and Q (k, 3) has y-intercept -4 . Then a possible value of k is (1) 1 (2) 2 (3) -2 (4) -4

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The solution of the differential equation $\frac{dy}{dx} = \frac{x+y}{x}$ satisfying the condition $y(1) = 1$ is (1) $y = \ln x + x$ (2) $y = x\ln x + x^2$ (3) $y = xe^{(x-1)}$ (4) $y = x\ln x + x$

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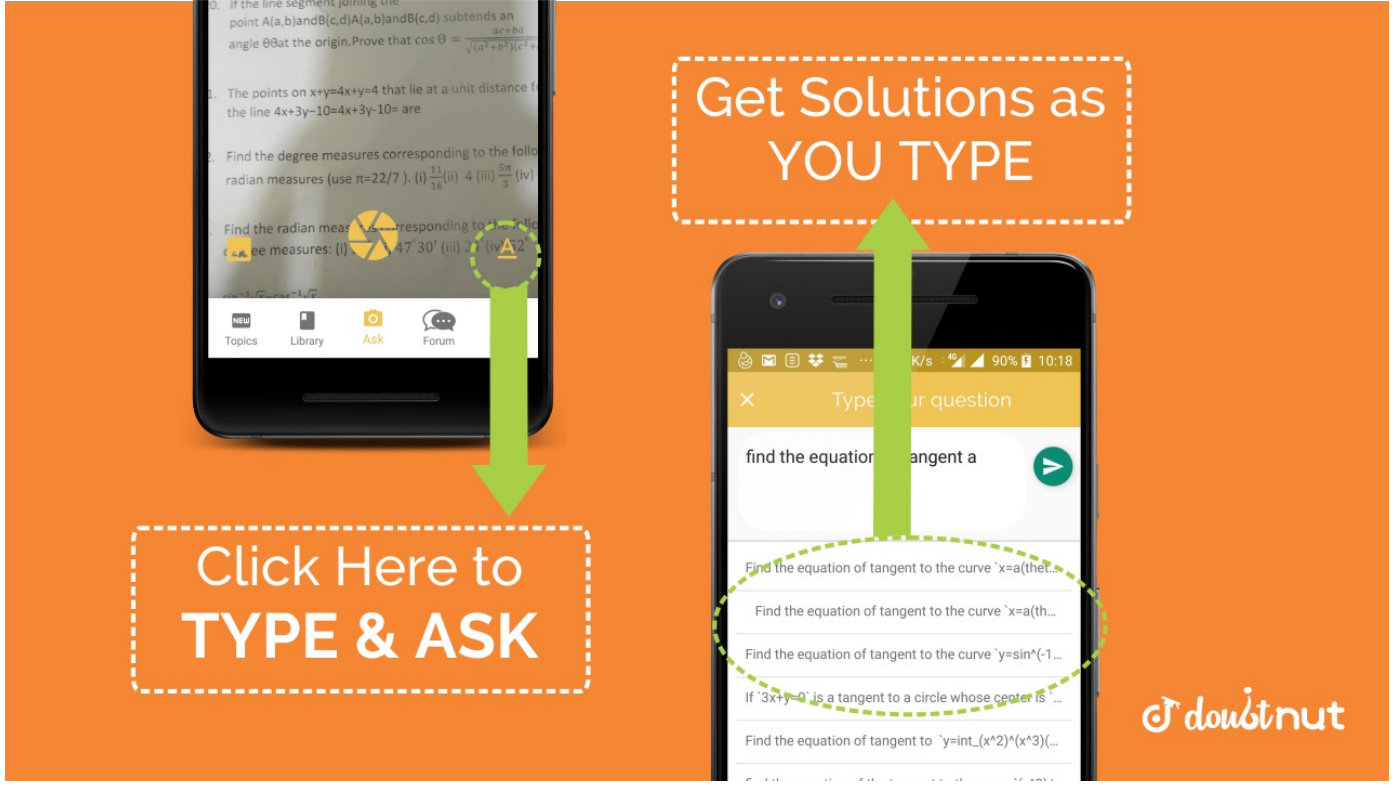

12	**JEE MAINS MATHS SOLUTIONS - 2008** The mean of the numbers a, b, 8, 5, 10 is 6 and the variance is 6.80. Then which one of the following gives possible values of a and b? (1) $a = 0, b = 7$ (2) $a = 5, b = 2$ (3) $a = 1, b = 6$ (4) $a = 3, b = 4$ Watch Free Video Solution on Doubtnut
13	**JEE MAINS MATHS SOLUTIONS - 2008** The vector $\vec{a} = \alpha\hat{i} + 2\hat{j} + \beta\hat{k}$ lies in the plane of the vectors $\vec{b} = \hat{i} + \hat{j}$ and $\vec{c} = \hat{j} + \hat{k}$ and bisects the angle between $\vec{b}$ and $\vec{c}$. Then which one of the following gives possible values of αandβ ? (1) $\alpha = 2, \beta = 2$ (2) $\alpha = 1, \beta = 2$ (3) $\alpha = 2, \beta = 1$ (4) $\alpha = 1, \beta = 1$ Watch Free Video Solution on Doubtnut
14	**JEE MAINS MATHS SOLUTIONS - 2008** The nonzero verctors $\vec{a}$, $\vec{b}$ and $\vec{c}$ are related by $\vec{a} = 8\vec{b}$ and $\vec{c} = -7\vec{b}$ $\vec{a} = 8\vec{b}$ and $\vec{c} = -7\vec{b}$. Then the angle between $\vec{a}$ and $\vec{c}$ is Watch Free Video Solution on Doubtnut
15	**JEE MAINS MATHS SOLUTIONS - 2008** The line passing through the points (5, 1, a) and (3, b, 1) crosses the yzplane at the point $\left(0, \frac{17}{2}, \frac{-13}{2}\right)$ .Then (1) $a = 2, b = 8$ (2) $a = 4, b = 6$ (3) $a = 6, b = 4$ (4) $a = 8, b = 2$ Watch Free Video Solution on Doubtnut

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If the straight lines $\frac{x-1}{k}=\frac{y-2}{2}=\frac{z-3}{3}$
$$\frac{x-1}{k}=\frac{y-2}{2}=\frac{z-3}{3}$$
and $\frac{x-2}{3}=\frac{y-3}{k}=\frac{z-1}{2}$
$$\frac{x-2}{3}=\frac{y-3}{k}=\frac{z-1}{2}$$
intersect at a point, then the integer k is equal to (1) -5 (2) 5 (3) 2 (4) -2

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Statement 1: For every natural number $n \geq 2$, $\frac{1}{\sqrt{1}}+\frac{1}{\sqrt{2}}+\ldots+\frac{1}{\sqrt{n}}>\sqrt{n}$
$$\frac{1}{\sqrt{1}}+\frac{1}{\sqrt{2}}+\ldots+\frac{1}{\sqrt{n}}>\sqrt{n}$$
. Statement 2: For every natural number `ngeq2,""n(n+1)

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Let A be a 2×2 matrix with real entries. Let I be the 2×2 identity matrix. Denote by tr (A), the sum of diagonal entries of A. Assume that $A^2=I$. Statement 1: If $A \neq I$ and $A \neq -I$, then det $A=-1$. Statement 2: If $A \neq I$ and $A \neq -I$, then $tr(A) \neq 0$.

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Statement 1: $\sum_{r=0}^{n}(r+1)^{n}c_{r}=(n+2)2^{n-1}.$

$$\sum_{r=0}^{n}(r+1)^{n}c_{r}$$
$$=(n+2)2^{n-1}.$$

Statement 2: $\sum_{r=0}^{n}(r+1)^{n}c_{r}=(1+x)^{n}+nx(1+x)^{n-1}.$

$$\sum_{r=0}^{n}(r+1)^{n}c_{r}$$
$$=(1+x)^{n}$$
$$+nx(1+x)^{n-1}.$$

(1) Statement 1 is false, Statement $(2)(3)-2(4)$ is true (6) Statement 1 is true, Statement $(7)(8)-2(9)$ (10) is true, Statement $(11)(12)-2(13)$ is a correct explanation for Statement 1 (15) Statement 1 is true, Statement $(16)(17)-2(18)$ (19) is true; Statement $(20)(21)-2(22)$ is not a correct explanation for Statement 1. (24) Statement 1 is true, Statement $(25)(26)-2(27)$ is false.

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In a shop there are five types of ice-creams available. A child buys six ice-creams. Statement -1: The number of different ways the child can buy the six ice-creams is $^{\wedge}10C_{5}$. Statement -2: The number of different ways the child can buy the six ice-creams is equal to the number of different ways of arranging 6 As and 4 Bs in a row.

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Let $f(x)=\left\{(x-1)\sin\left(\frac{1}{x-1}\right),\quad \text{if}\quad x\neq 10,\quad \text{if}\quad x=1\right\}$

21	$f(x) = \{(x - 1)\sin\left(\frac{1}{x-1}\right), \text{ if } x \neq 10, \text{ if } x = 1\}$. Then which one of the following is true? (1) f is neither differentiable at (2)(3)$x = 0$(4) (5) nor at (6)(7)$x = 1$(8) (10) f is differentiable at (11)(12)$x = 0$(13) (14) and at (15)(16)$x = 1$(17) (19) f is differentiable at (20)(21)$x = 0$(22) (23) but not at (24)(25)$x = 1$(26) (28) f is differentiable at (29)(30)$x = 1$(31) (32) but not at (33)(34)$x = 0$(35) Watch Free Video Solution on Doubtnut
22	**JEE MAINS MATHS SOLUTIONS - 2008** The first two terms of a geometric progression add up to 12. The sum of the third and the fourth terms is 48. If the terms of the geometric progression are alternately positive and negative, then the first term is Watch Free Video Solution on Doubtnut
	JEE MAINS MATHS SOLUTIONS - 2008 Suppose the cube $x^3 px + q$ has three distinct real roots where $p > 0$ and $q > 0$. Then which one of the following holds? (1) The cubic has minima at (2)(3)$\sqrt{(4)(5)(6)\frac{p}{7}3(8)(9)(10)}$ $(2)(3)\sqrt{(4)(5)(6)\frac{p}{7}3(8)(9)(10)}(11)(12)$ (13) and maxima at (14)(15) - $\sqrt{(16)(17)(18)\frac{p}{19}3(20)(21)(22)(23)(24)}$ $(14)(15) - \sqrt{(16)(17)(18)\frac{p}{19}3(20)(21)(22)}(23)(24)$ (26) The cubic has minima at (27)(28) - $\sqrt{(29)(30)(31)\frac{p}{32}3(33)(34)(35)(36)(37)}$

23	(27)(28) $-\sqrt{(29)(30)(31)\frac{p}{32}3(33)(34)(35)}$ (36)(37) (38) and maxima at (39)(40)$\sqrt{(41)(42)(43)\frac{p}{44}3(45)(46)(47)(48)(49)}$ (39)(40 $)\sqrt{(41)(42)(43)\frac{p}{44}3(45)(46)(47)}$ (48)(49) (51) The cubic has minima at both (52)(53)$\sqrt{(54)(55)(56)\frac{p}{57}3(58)(59)(60)(61)(62)}$ (52)(53 $)\sqrt{(54)(55)(56)\frac{p}{57}3(58)(59)(60)}$ (61)(62) (63) and (64)(65) - $\sqrt{(66)(67)(68)\frac{p}{69}3(70)(71)(72)(73)(74)}$ (64)(65) $-\sqrt{(66)(67)(68)\frac{p}{69}3(70)(71)(72)}$ (73)(74) (76) The cubic has maxima at both (77)(78)$\sqrt{(79)(80)(81)\frac{p}{82}3(83)(84)(85)(86)(87)}$ (77)(78 $)\sqrt{(79)(80)(81)\frac{p}{82}3(83)(84)(85)}$ (86)(87) (88) and (89)(90) - $\sqrt{(91)(92)(93)\frac{p}{94}3(95)(96)(97)(98)(99)}$ (89)(90) $-\sqrt{(91)(92)(93)\frac{p}{94}3(95)(96)(97)}$ (98)(99) (100) Watch Free Video Solution on Doubtnut

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How many real solutions does the equation $x^7 + 14x^5 + 16x^3 + 30x560 = 0$
$x^7 + 14x^5 + 16x^3$
$+ 30x560 = 0$
have? (1) 7 (2) 1 (3) 3 (4) 5

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The statement $pq\vec{p}$ is equivalent to (1) $pp\vec{q}$ (2) $\overrightarrow{pp} \vee q$ (3) $\overrightarrow{pp} \wedge q$ (4) $\overrightarrow{pp} \leftrightarrow q$

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The value of $\cot\left(\operatorname{cosec}^{-1}\frac{5}{3} + \frac{\tan^{-1}2}{3}\right)$
$\cot\left(\cos ec^{-1}\frac{5}{3}\right.$
$\left.+ \frac{\tan^{-1}2}{3}\right)$
is: (1) $\frac{6}{17}$ (2) $\frac{3}{17}$ (2) $\frac{4}{17}$ (4) $\frac{5}{17}$

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The differential equation of the family of circles with fixed radius 5 units and centre on the line $y = 2$ is (1) $(x - 2)y'^2 = 25 - (y - 2)^2$

27	$(x-2)y'^2 = 25 - (y-2)^2$ (2) $(y-2)y'^2 = 25 - (y-2)^2$ $(y-2)y'^2 = 25 - (y\text{-}2)^2$ (3) $(y-2)2y'^2 = 25 - (y-2)^2$ $(y-2)2y'^2 = 25 - (y-2)^2$ (4) $(x-2)2y'^2 = 25 - (y-2)^2$ $(x-2)2y'^2 = 25 - (y-2)^2$ Watch Free Video Solution on Doubtnut

28	**JEE MAINS MATHS SOLUTIONS - 2008** Let $I = \int_0^1 \frac{\sin}{\sqrt{x}} dx \text{and} J = \int_0^1 \frac{\cos x}{\sqrt{x}} dx$ $I = \int_0^1 \frac{\sin}{\sqrt{x}} dx \text{and} J$ $= \int_0^1 \frac{\cos x}{\sqrt{x}} dx$ Then which one of the following is true? (1) $I > \frac{2}{3} \text{and} j > 2$ (2) $I < \frac{2}{3} \text{and} j < 2$ (3) $I < \frac{2}{3} \text{and} j > 2$ (4) $I > \frac{2}{3} \text{and} j < 2$ Watch Free Video Solution on Doubtnut
29	**JEE MAINS MATHS SOLUTIONS - 2008** The area of the plane region bounded by the curves $x + 2y^2 = 0$ and $x + 3y^2 = 1$ is equal to (1) $\frac{5}{3}$ (2) $\frac{1}{3}$ (3) $\frac{2}{3}$ (4) $\frac{4}{3}$

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30	**JEE MAINS MATHS SOLUTIONS - 2008** The value of $\sqrt{2}\int \frac{\sin x dx}{\sin\left(x - \frac{\pi}{4}\right)}$ is: (1) $x + \log\left|\cos\left(x - \frac{\pi}{4}\right)\right| + c$ $x + \log\left|\cos\left(x - \frac{\pi}{4}\right)\right| + c$ (2) $x - \log\left|\sin\left(x - \frac{\pi}{4}\right)\right| + c$ (3) $x + \log\left|\sin\left(x - \frac{\pi}{4}\right)\right| + c$ (4) $x - \log\left|\cos\left(x - \frac{\pi}{4}\right)\right| + c$ Watch Free Video Solution on Doubtnut
31	**JEE MAINS MATHS SOLUTIONS - 2008** How many different words can be formed by jumbling the letters in the word MISSISSIPPI in which no two S are adjacent? (1) $8\ \hat{}\ 6C_4\ \hat{}\ 7C_4$ (2) $6\cdot 7\ \hat{}\ 8C_4$ (3) $6\cdot 8\ \hat{}\ 7C_4$ (4) $7\ \hat{}\ 6C_4\ \hat{}\ 8C_4$ Watch Free Video Solution on Doubtnut
32	**JEE MAINS MATHS SOLUTIONS - 2008** Let a, b, c be any real numbers. Suppose that there are real numbers x, y, z not all zero such that $x = cy + bz, y = az + cxandz = bx + ay$. Then $a^2 + b^2 + c^2 + 2abc$ is equal to (1) 2 (2) 1 (3) 0 (4) 1 Watch Free Video Solution on Doubtnut

33	**JEE MAINS MATHS SOLUTIONS - 2008** Let A be a square matrix all of whose entries are integers. Then which one of the following is true? (1) If $detA = \pm 1, thenA^{1}$ exists but all its entries are not necessarily integers (2) If $detA \neq \pm 1, thenA^{1}$ exists and all its entries are non-integers (3) If $detA = \pm 1, thenA^{1}$ exists and all its entries are integers (4) If $detA = \pm 1, thenA^{1}$ need not exist Watch Free Video Solution on Doubtnut
34	**JEE MAINS MATHS SOLUTIONS - 2008** The quadratic equations $x^2\text{-}6x + a = 0 and x^2\text{-}cx + 6 = 0$ have one root in common. The other roots of the first and second equations are integers in the ratio 4 : 3. Then the common root is (1) 1 (2) 4 (3) 3 (4) 2 Watch Free Video Solution on Doubtnut