Ques No.	Question
1	**JEE MAINS MATHS SOLUTIONS - 2017** The Integral $\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \frac{dx}{1+\cos x}$ is equal to: Watch Free Video Solution on Doubtnut
2	**JEE MAINS MATHS SOLUTIONS - 2017** Let $I_n = \int \tan^n x dx,$ $(n > 1)$ If $I_4 + I_6 = a \tan^5 x$ $+ bx^5 + C,$ Where C is a constant of integration, then the ordered pair (a, b) is equal to : (1) $\left(\frac{5}{1}, -1\right)$ (2) $\left(-\frac{1}{5, 0}\right)$ (3) $\left(-\frac{1}{5}, 1\right)$ (4) $\left(\frac{1}{5}, 0\right)$ Watch Free Video Solution on Doubtnut
3	**JEE MAINS MATHS SOLUTIONS - 2017** The area (in sq. units) of the region $\{(x, y) : x \geq 0, x + y$ $\leq 3, x^2 \leq 4yandy$ $\leq 1 + \sqrt{x}\} is:$ $\frac{7}{3}$ (2) $\frac{5}{2}$ (3) $\frac{59}{12}$ (4) $\frac{3}{2}$ Watch Free Video Solution on Doubtnut

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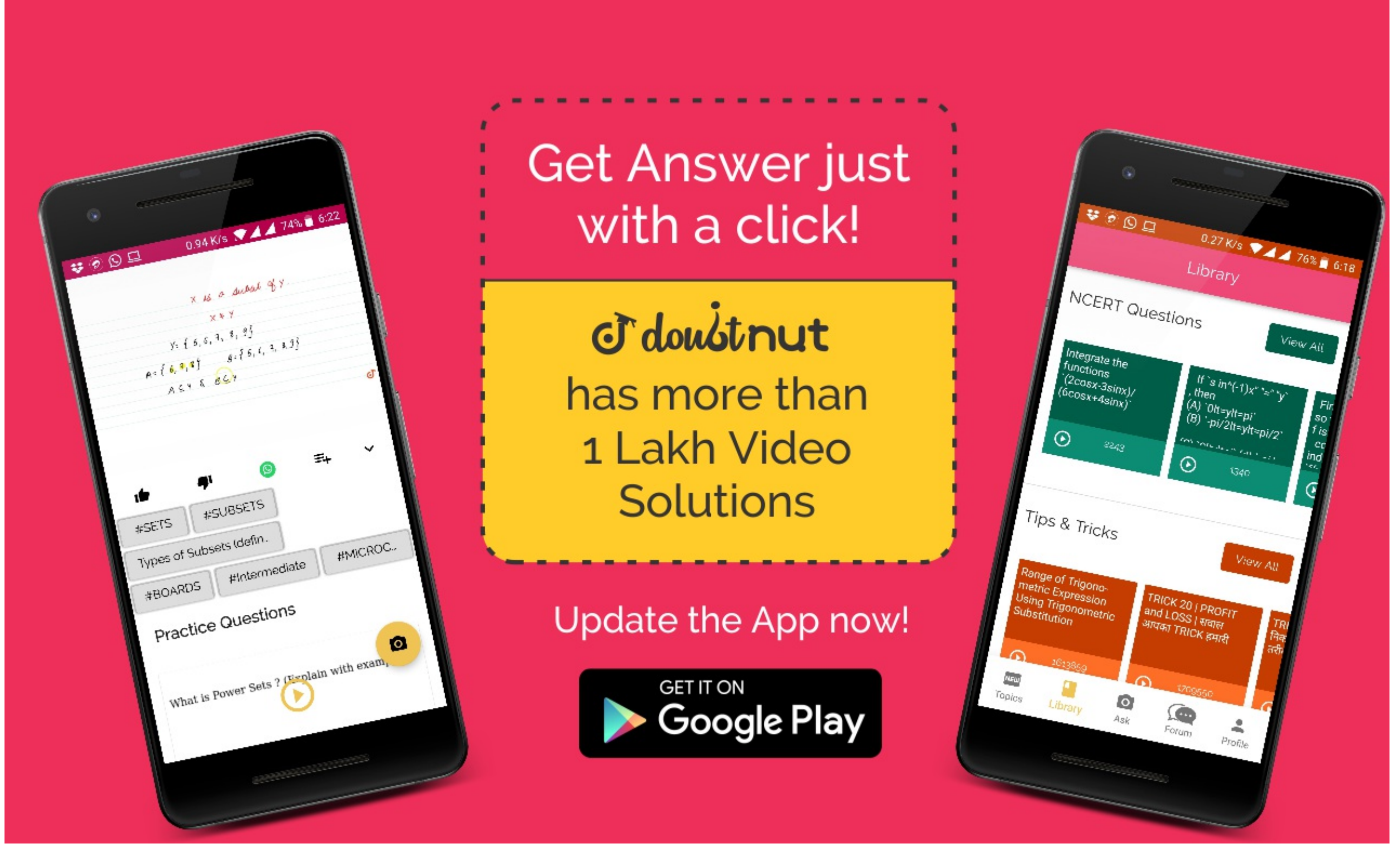

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A box contains 15 green and 10 yellow balls. If 10 balls are randomly drawn, one-by-one, with replacement, then the variance of the number of green balls drawn is: (1)4 (2) $\frac{6}{25}$ (3) $\frac{12}{5}$ (4) 6

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If
$(2 + \sin x)\frac{dy}{dx}$
$+ (y + 1)\cos x = 0$
and
$y(0) = 1,$
$theny\left(\frac{\pi}{2}\right)$
is equal to $-\frac{1}{3}$ (2) $\frac{4}{3}$ (3) $\frac{1}{3}$ (4) $-\frac{2}{3}$

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Let ω be a complex number such that $2\omega + 1 = z$ where $z = \sqrt{-3}.$
$If \left| 1111 - \omega^2 \right.$
$\left. - 1\omega^2 1\omega^2\omega^7 \right| = 3k,$

then$k$ is equal to : -1 (2) 1 (3) $-z$ (4) z

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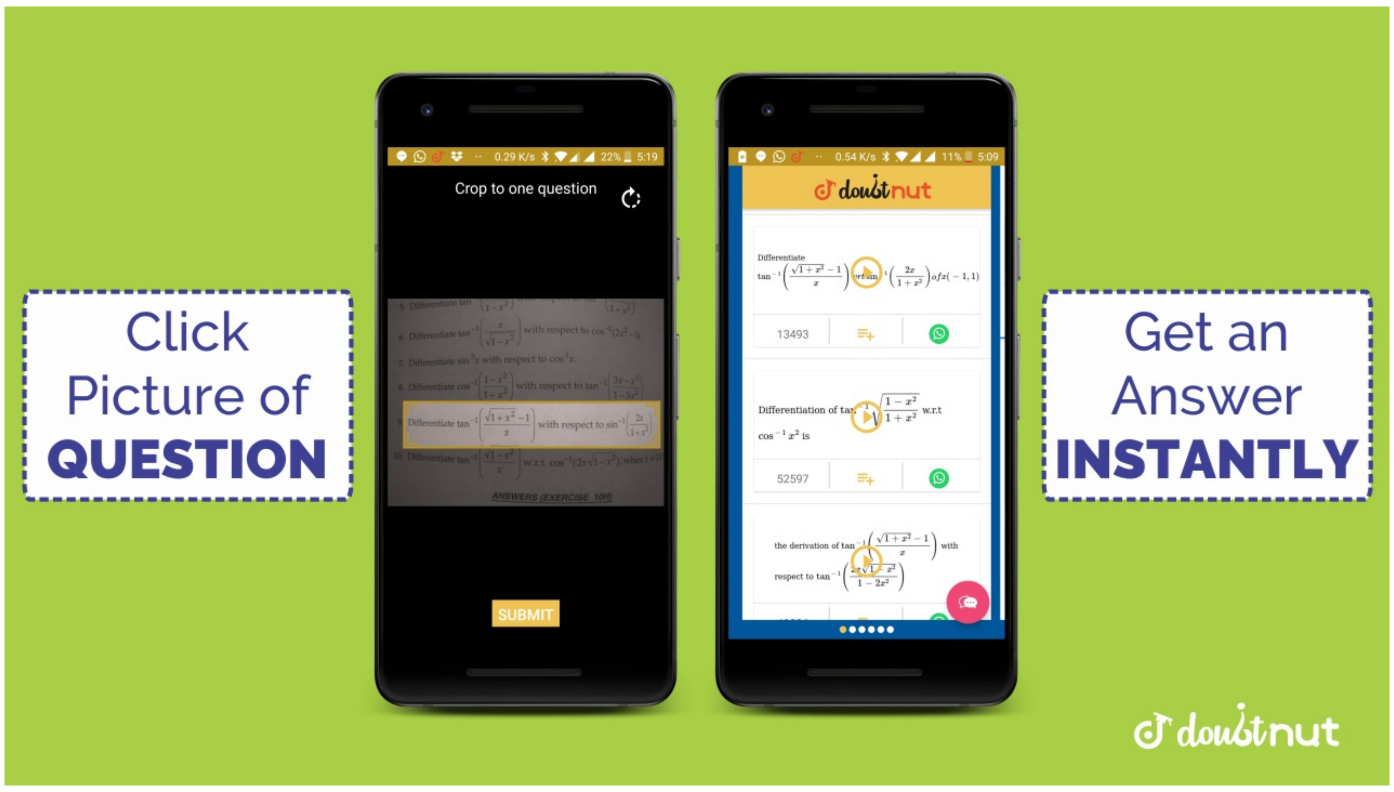
7	Let $\widehat{a} = 2\hat{i} + \hat{j} - 2\hat{k}$ and $\vec{b} = \hat{i} + \hat{j}$. Let $\vec{c}$ be a vector such that $\left\vert \vec{c} - \vec{a} \right\vert = 3,$ $\left\vert \left(\vec{a} \times \vec{b} \right) \times \vec{c} \right\vert$ $= 3$ and the angle between $\vec{c}$ and $\vec{a} \times \vec{b}$ be 30^0 . Then $\vec{a} \cdot \vec{c}$ is equal to : 5 (2) $\frac{1}{8}$ (3) $\frac{25}{8}$ (4) 2 Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
8	**JEE MAINS MATHS SOLUTIONS - 2017** The radius of a circle, having minimum area, which touches the curve $y = 4 - x^2$ and the lines $y = \vert x \vert$ is : $4\left(\sqrt{2} - 1\right)$ (2) $4\left(\sqrt{2} + 1\right)$ (3) $2\left(\sqrt{2} + 1\right)$ (4) $2\left(\sqrt{2} - 1\right)$ Watch Free Video Solution on Doubtnut
9	**JEE MAINS MATHS SOLUTIONS - 2017** If for $x\left(0, \frac{1}{4}\right)$, the derivative of $\tan^{-1}\left(\frac{6x\sqrt{x}}{1 - 9x^3}\right)$ is $\sqrt{x}g(x)$, then $g(x)$ equals: (1) $\frac{3x}{1 - 9x^3}$ (2) $\frac{3}{1 + 9x^3}$ (3) $\frac{9}{1 + 9x^3}$ (4) $\frac{3x\sqrt{x}}{1 - 9x^3}$ Watch Free Video Solution on Doubtnut
10	**JEE MAINS MATHS SOLUTIONS - 2017** If two different numbers are taken from the set $\{0, 1, 2, 3, \ldots\ldots, 10\}$; then the probability that their sum as well absolute difference are both multiple of 4, is: (1) $\frac{14}{45}$ (2) $\frac{7}{55}$ (3) $\frac{6}{55}$ (4) $\frac{12}{55}$

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11	**JEE MAINS MATHS SOLUTIONS - 2017** $\lim_{x - \frac{\pi}{2}} \frac{\cot x - \cos x}{\pi - 2x}$ equals: (1) $\frac{1}{8}$ (2) $\frac{1}{4}$ (3) $\frac{1}{24}$ (4) $\frac{1}{16}$ ⊙ Watch Free Video Solution on Doubtnut
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12	**JEE MAINS MATHS SOLUTIONS - 2017** The value of (21C1 $-$ 10C1) $+$ (21C2 $-$ 10C2) $+$ (21C3 $-$ 10C3) $+$ (21C4 - 10C4) $+ +$ (21C10 $-$ 10C10), is $2^{20} - 2^{9}$ (2) $2^{20} - 2^{10}$ (3) $2^{21} - 2^{11}$ (4) $2^{21} - 2^{10}$ ⊙ Watch Free Video Solution on Doubtnut
13	**JEE MAINS MATHS SOLUTIONS - 2017** For three events A, B and C, P (Exactly one of A or B occurs) $= P$ (Exactly one of B or C occurs) $= P$ (Exactly one of C or A occurs) $= \frac{1}{4}$ and P (All the three events occur simultaneously) $= \frac{1}{6}$. Then the probability that at least one of the events occurs, is : $\frac{7}{64}$ (2) $\frac{3}{16}$ (3) $\frac{7}{32}$ (4) $\frac{7}{16}$ ⊙ Watch Free Video Solution on Doubtnut
14	**JEE MAINS MATHS SOLUTIONS - 2017** Let a vertical tower Ab have its end A on the level ground. Let C be the mid point of AB and P be a point on the ground such that $AP = 2AB$. If $\angle BPC = \beta$, then $\tan \beta$ is equal to : $\frac{2}{9}$ (2) $\frac{4}{9}$ (3) $\frac{6}{7}$ (4) $\frac{1}{4}$

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The eccentricity of an ellipse whose centre is at the origin is $\frac{1}{2}$. if one of its directrices is $x = -4$, then the equation of the normal to it at $\left(1, \frac{3}{2}\right)$ is: $4x + 2y = 7$ (2) $x + 2y = 4$ (3) $2y - x = 2$ (4) $4x - 2y = 1$

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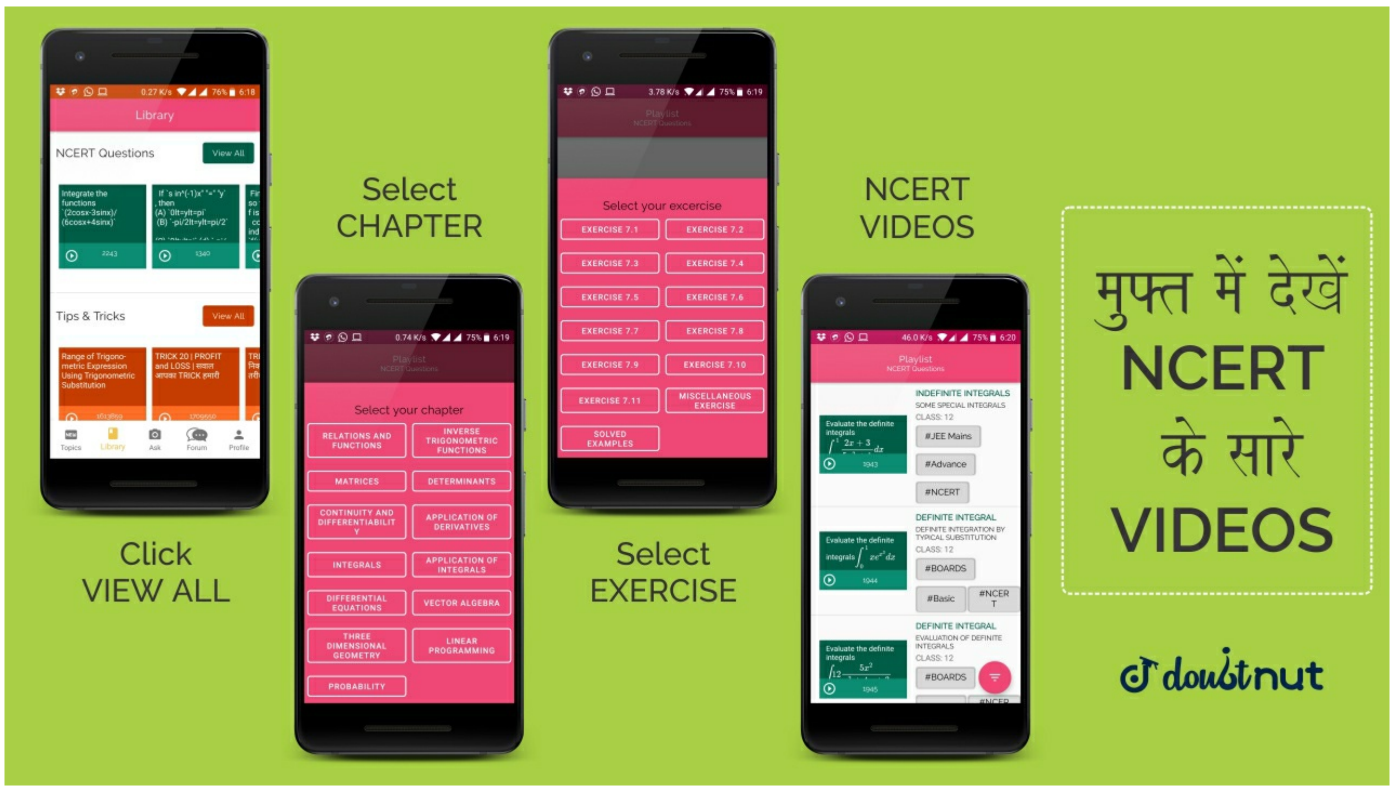

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If, for a positive integer n, the quadratic equation,
$x(x+1)$
$+ (x-1)(x+2)$
$+ \dots + (x+n-1)(x$
$+ n) = 10n$
has two consecutive integral solutions, then n is equal to : 10 (2) 11 (3) 12 (4) 9

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The following statement $\overrightarrow{\left(p \overrightarrow{q}\right)\left(\sim p \overrightarrow{q}\right) q}$ is: equivalent to $p \overrightarrow{\sim} q$ (2) a fallacy a tautology (4) equivalent to $\sim p \overrightarrow{q}$

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The normal to the curve

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$y(x-2)(x-3)=x$
$+6$
at the point where the curve intersects the y-axis , passes through the point : $\left(\frac{1}{2},\ -\frac{1}{3}\right)$ (2) $\left(\frac{1}{2},\frac{1}{3}\right)$ (3) $\left(-\frac{1}{2},\ -\frac{1}{2}\right)$ (4) $\left(\frac{1}{2},\frac{1}{2}\right)$

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For any three positive real numbers a, b and
$c, 9\left(25a^2+b^2\right)$
$+25\left(c^2-3ac\right)$
$=15b(3a+c)$.
Then : (1)a, b and$c$ are in$A\dot{P}$ (2) a, b and c are in $G\dot{P}$ (3)b, c and a are in $G\dot{P}$ (4) b, c and a are in $A\dot{P}$

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If the image of the point $P(1,\ -2,3)$ in the plane,
$2x+3y-4z+22$
$=0$
measured parallel to the line, $\frac{x}{1}-\frac{y}{4}-\frac{z}{5}$ is Q , then PQ is equal to : $\sqrt{42}$ (2) $6\sqrt{5}$ (3) $3\sqrt{5}$ (4) $3\sqrt{42}$

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21	**JEE MAINS MATHS SOLUTIONS - 2017** If $5(\tan^2 x - \cos^2 x)$ $= 2\cos 2x + 9,$ then the value of $\cos 4x$ is: $\frac{2}{9}$ (2) $-\frac{7}{9}$ (3) $-\frac{3}{5}$ (4) $\frac{1}{3}$ Watch Free Video Solution on Doubtnut
22	**JEE MAINS MATHS SOLUTIONS - 2017** Let a, b, cR. If $f(x) = ax^2 + bx + c$ is such that $a + b + c = 3$ and $f(x + y) = f(x)$ $+ f(y) + xy, \forall x,$ $yR,$ then $\sum_{n=1}^{10} f(n)$ is equal to 190 (2) 255 (3) 330 (4) 165 Watch Free Video Solution on Doubtnut
23	**JEE MAINS MATHS SOLUTIONS - 2017** The distance of the point $(1, 3, -7)$ from the plane passing through the point $(1, -1, -1)$, having normal perpendicular to both the lines $\frac{x-1}{1} = \frac{y+2}{-2}$ $= \frac{z-4}{3} and \frac{x-2}{2}$ $= \frac{y+1}{-1}$ $= \frac{z+7}{-1} is:$ $\frac{5}{\sqrt{83}}$ (2) $\frac{10}{\sqrt{74}}$ (3) $\frac{20}{\sqrt{74}}$ (4) $\frac{10}{\sqrt{83}}$ Watch Free Video Solution on Doubtnut
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24	**JEE MAINS MATHS SOLUTIONS - 2017** If S is the set of distinct values of $'b$ for which the following system of linear equations $x+y+z=1$ $x+ay+z=1$ $ax+by+z=0$ has no solution, then S is : a finite set containing two or more elements (2) a singleton an empty set (4) an infinite set Watch Free Video Solution on Doubtnut
25	**JEE MAINS MATHS SOLUTIONS - 2017** A hyperbola passes through the point $P\left(\sqrt{2}, \sqrt{3}\right)$ and has foci at $\left(\pm 2, 0\right)$. Then the tangent to this hyperbola at P also passes through the point : Watch Free Video Solution on Doubtnut
26	**JEE MAINS MATHS SOLUTIONS - 2017** Let k be an integer such that the triangle with vertices $(k, -3k)$, $(5, k)$ and $(-k, 2)$ has area $28sq$. units. Then the orthocentre of this triangle is at the point : $\left(1, -\frac{3}{4}\right)$ (2) $\left(2, \frac{1}{2}\right)$ (3) $\left(2, -\frac{1}{2}\right)$ (4) $\left(1, \frac{3}{4}\right)$ Watch Free Video Solution on Doubtnut
27	**JEE MAINS MATHS SOLUTIONS - 2017** Twenty metres of wire is available for fencing off a flower-bed in the form of a circular sector. Then the maximum area (in $sq\dot{m}$) of the flower-bed is: 25 (2) 30 (3) 12.5 (4) 10 Watch Free Video Solution on Doubtnut

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28	**JEE MAINS MATHS SOLUTIONS - 2017** The function $f:R\overrightarrow{-\frac{1}{2},\frac{1}{2}}$ defined as $f(x)=\frac{x}{1+x^2}$, is : Surjective but not injective (2) Neither injective not surjective Invertible (4) Injective but not surjective Watch Free Video Solution on Doubtnut
29	**JEE MAINS MATHS SOLUTIONS - 2017** A man X has 7 friends, 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and Y are in the party, is : 469 (2) 484 (3) 485 (4) 468 Watch Free Video Solution on Doubtnut
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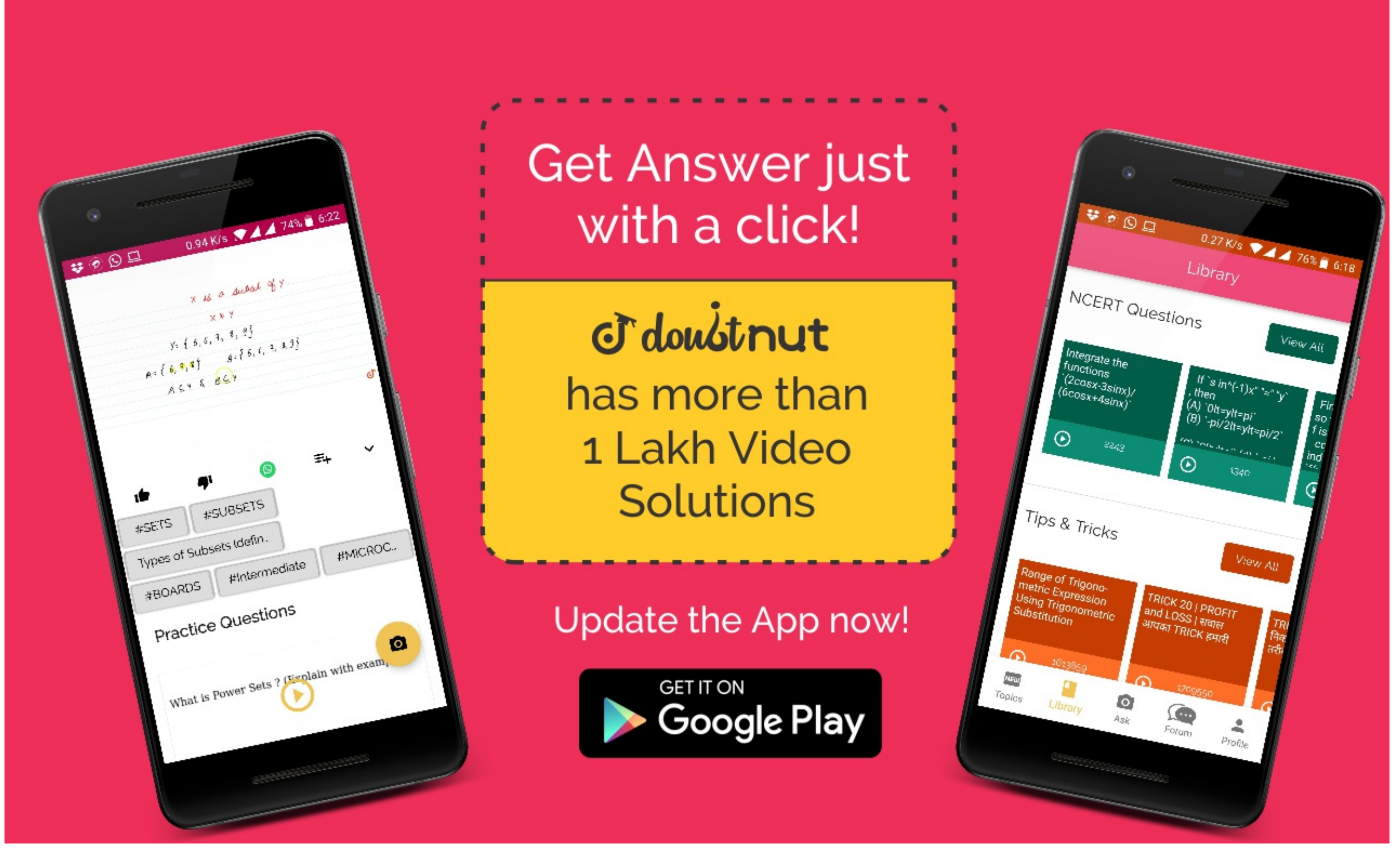
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