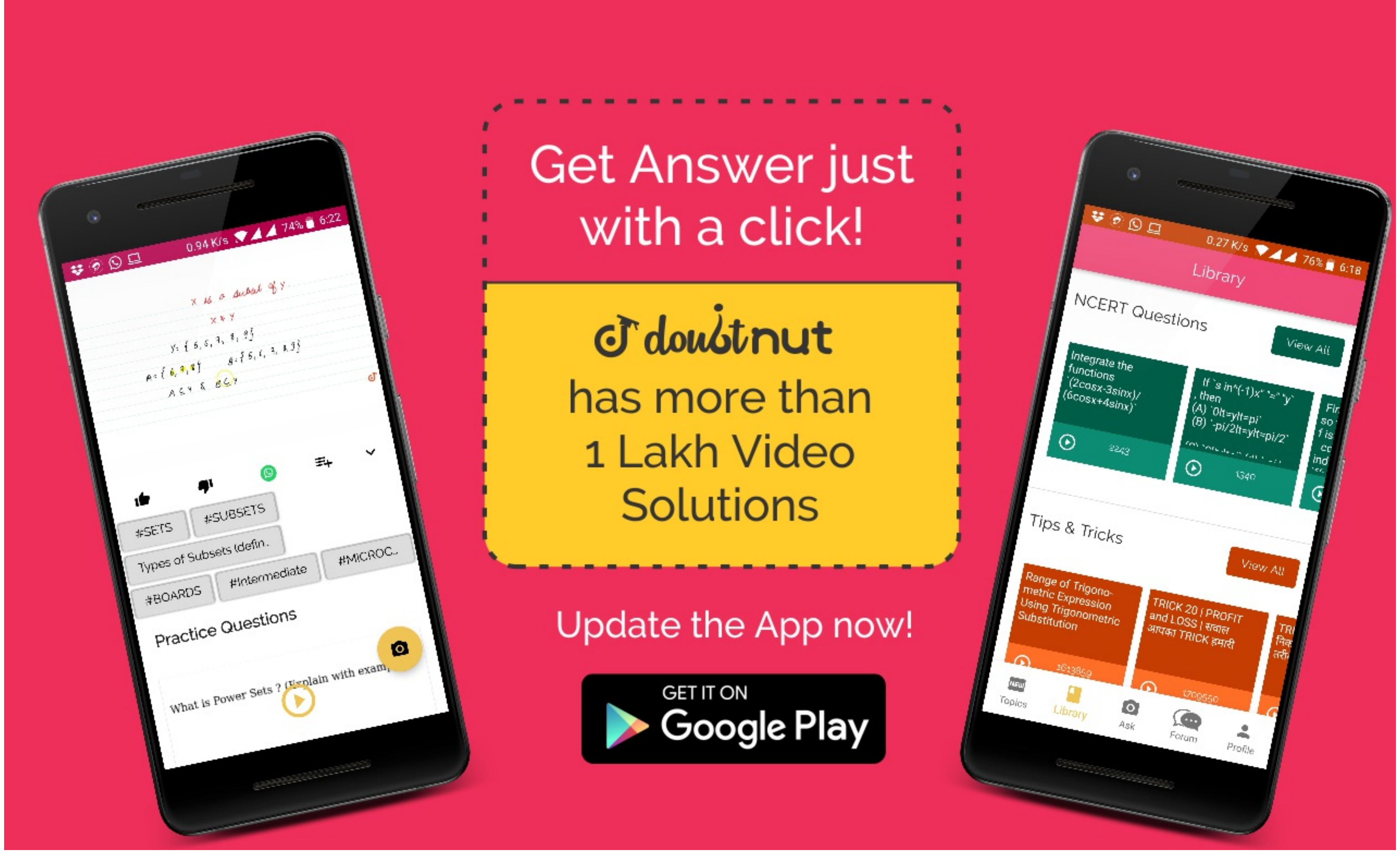
CENGAGE / G TEWANI MATHS SOLUTIONS

CHAPTER COMPLEX NUMBERS AND QUADRATIC EQUATIONS || ALGEBRA

Ques No.	Question
1	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Basics** If $x = 1 andx = 2$ are solutions of equations $x^3 + ax^2 + bx + c = 0 anda + b = 1,$ then find the of $b.$ Watch Free Video Solution on Doubtnut
2	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Basics** Let $f(x) = a^2 + bx + c$ where a ,b , c in $R anda \ne 0.$ It is known that $f(5) = -3f(2)$ and that 3 root of $f(x) = 0.$ then find the other of $f(x) = 0.$ Watch Free Video Solution on Doubtnut
3	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Basics** A polynomial in x of degree 3 vanishes when $x = 1$ and $x = -2$, ad has the values 4 ar when $x = -1$ and $x = 2$, respectively. Then find the value of polynomial when $x = 0$. Watch Free Video Solution on Doubtnut
4	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Basics** If $(1 - p)$ is a root of quadratic equation $x^2 + px + (1 - p) = 0,$ then find its roots. Watch Free Video Solution on Doubtnut
5	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Basics** The quadratic polynomial $p(x)$ ha following properties $p(x)$ can be positive or zero for al numbers $p(1) = 0 andp(2) = 2.$ Then find the quadratic polynomial. Watch Free Video Solution on Doubtnut

doubtnut पढ़ना हुआ आसान	
6	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Meaning Of Roots (Zeros) Of An Equation** In how many points graph of $y = x^3 - 3x2 + 5x - 3$ interest the x-axis? Watch Free Video Solution on Doubtnut
7	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Meaning Of Roots (Zeros) Of An Equation** Which of the following pair of graphs intersect? $y = x^2 - xandy = 1$ $y = x^2 - 2xandy =$ $y = x^2 - x + 1andy = x - 4$ Watch Free Video Solution on Doubtnut
8	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Meaning Of Roots (Zeros) Of An Equation** Prove that graphs $y = 2x - 3andy = x^2 - x$ never interest. Watch Free Video Solution on Doubtnut
9	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Key Points In Solving An Equation** Solve $\frac{x^2 - 2x - 3}{x + 1} = 0.$ Watch Free Video Solution on Doubtnut
10	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Key Points In Solving An Equation** Solve $\left(x^3 - 4x\right)\sqrt{x^2 - 1} = 0.$

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11	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Key Points In Solving An Equation** Solve $\frac{2x-3}{x-1}+1=\frac{6x-x^2-6}{x-1}$. Watch Free Video Solution on Doubtnut
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12	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Graphs Of Polynomial Functions** Find how many roots of the equations $x^4+2x^2-8x+3=0$. Watch Free Video Solution on Doubtnut
13	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Graphs Of Polynomial Functions** How many real solutions does the equation $x^7+14x^5+16x^3+30x-560=0$ have? Watch Free Video Solution on Doubtnut
14	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve $\sqrt{5x^2-6x+8}+\sqrt{5x^2-6x-7}=1$. Watch Free Video Solution on Doubtnut
15	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic**

	Solve $\left(x^2 - 5x + 7\right)^2 - (x - 2)(x - 3) = 1$. Watch Free Video Solution on Doubtnut
16	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve the equation $x^4 - 5x^2 - 6x - 5 = 0$. Watch Free Video Solution on Doubtnut
17	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve the equation $12x^4 - 56x^3 + 89x^2 - 56x + 12 = 0$. Watch Free Video Solution on Doubtnut
18	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve the equation $3^{x^2 - x} + 4^{x^2 - x} = 25$. Watch Free Video Solution on Doubtnut
19	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve the equation $(x - 1)^4 + (x - 5)^4 = 82$. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic

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Solve the equation $(x+2)(x+3)(x+8) \times (x+12) = 4x^2$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic

Evaluate $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \infty}}}$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic

Solve $\sqrt{x+5} + \sqrt{x+21} = \sqrt{6x+40}$.

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23

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems

Find the remainder when $x^3 + 4x^2 - 7x + 6$ is diided by $x - 1$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems

If the expression $ax^4 + bx^3 - x^2 + 2x + 3$ has remainder $4x + 3$ when divided by $x^2 + x - 2$, fin value of $a and b$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems

25	Given that $x^2 + x - 6$ is a factor of $2x^4 + x^3 - ax^2 + bx + a + b - 1$, find the value of $aandb\cdot$ Watch Free Video Solution on Doubtnut
26	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems** Use the factor theorem to find the value of k for which $(a + 2b), wherea, b \neq 0$ is a fact $a^4 + 32b^4 + a^3b(k + 3)\cdot$ Watch Free Video Solution on Doubtnut
27	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems** If c, d are the roots of the equation $(x - a)(x - b) - k = 0$, prove that a, b are roots of the equa $(x - c)(x - d) + k = 0.$ Watch Free Video Solution on Doubtnut
28	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Identity Equation And Inequalities** If $\left(a^2 - 1\right)x^2 + (a - 1)x + a^2 - 4a + 3 = 0$ is identity in x , then find the value of a . Watch Free Video Solution on Doubtnut
29	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Identity Equation And Inequalities** Show that $\frac{(x + b)(x + c)}{(b - a)(c - a)} + \frac{(x + c)(x + a)}{(c - b)(a - b)} + \frac{(x + a)(x + b)}{(a - c)(b - c)} = 1$ is an identity. Watch Free Video Solution on Doubtnut
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30	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Identity Equation And Inequalities** A certain polynomial $P(x)x \in R$ when divided by $x - a, x - bandx - c$ leaves remaindersa, b, c resepectively. Then find remainder when $P(x)$ is divided by $(x - a)(x - b)(x - c)whereab, c$ distinct. Watch Free Video Solution on Doubtnut
31	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If roots of equation $x^2 - 2cx + ab = 0$ are real and unequal, then prove that the roo $x^2 - 2(a + b)x + a^2 + b^2 + 2c^2 = 0$ will be imaginary. Watch Free Video Solution on Doubtnut
32	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If the roots of the equation $a(b - c)x^2 + b(c - a)x + c(a - b) = 0$ are equal, show $2/b = 1/a + 1/ \cdot$ Watch Free Video Solution on Doubtnut
33	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Prove that the roots of the equation $\left(a^4 + b^4\right)x^2 + 4abcdx + \left(c^4 + d^4\right) = 0$ cannot be differe real. Watch Free Video Solution on Doubtnut
34	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If the roots of the equation $x^2 - 8x + a^2 - 6a = 0$ are real distinct, then find all possible value Watch Free Video Solution on Doubtnut
35	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Find the quadratic equation with rational coefficients whose one root is $1/\left(2 + \sqrt{5}\right)$. Watch Free Video Solution on Doubtnut

36	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $f(x) = ax^2 + bx + c, g(x) = -ax^2 + bx + c, where ac \neq 0,$ then prove that $f(x)g(x) = 0$ has at two real roots. Watch Free Video Solution on Doubtnut
37	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If a ,b ,c are non zero rational no then prove roots of equa $\left(abc^2\right)x^2 + 3a^2cx + b^2cx - 6a^2 - ab + 2b^2 = 0$ are rational. Watch Free Video Solution on Doubtnut
38	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** if cosθ , sinϕ , sinθ are in g.p then check the nature of roots of $x^2 + 2\cot\phi . x + 1 = 0$ Watch Free Video Solution on Doubtnut
39	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $a, b, andc$ are odd integers, then prove that roots of $ax^2 + bx + c = 0$ cannot be rational. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

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Form a quadratic equation whose roots are $-4 and 6$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

Form a quadratic equation with real coefficients whose one root is $3-2i$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

If roots of the equation $ax^2+bx+c=0$ are $\alpha and \beta$, find the equation whose roots are $\frac{1}{\alpha}$,

$\alpha, -\beta$ (iii) $\frac{1-\alpha}{1+\alpha}, \frac{1-\beta}{1+\beta}$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

If roots of equation $3x^2+5x+1=0 are \left(\sec\theta_1-tan\theta_1\right) and \left(\operatorname{cosec}\theta_2-\cot\theta_2\right)$. Then find equation whose roots are $\left(\sec\theta_1+tan\theta_1\right) and \left(\operatorname{cosec}\theta_2+\cot\theta_2\right)$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

If $ab+bc+ca=0$, then solve $a(b-2c)x^2+b(c-2a)x+c(a-2b)=0$.

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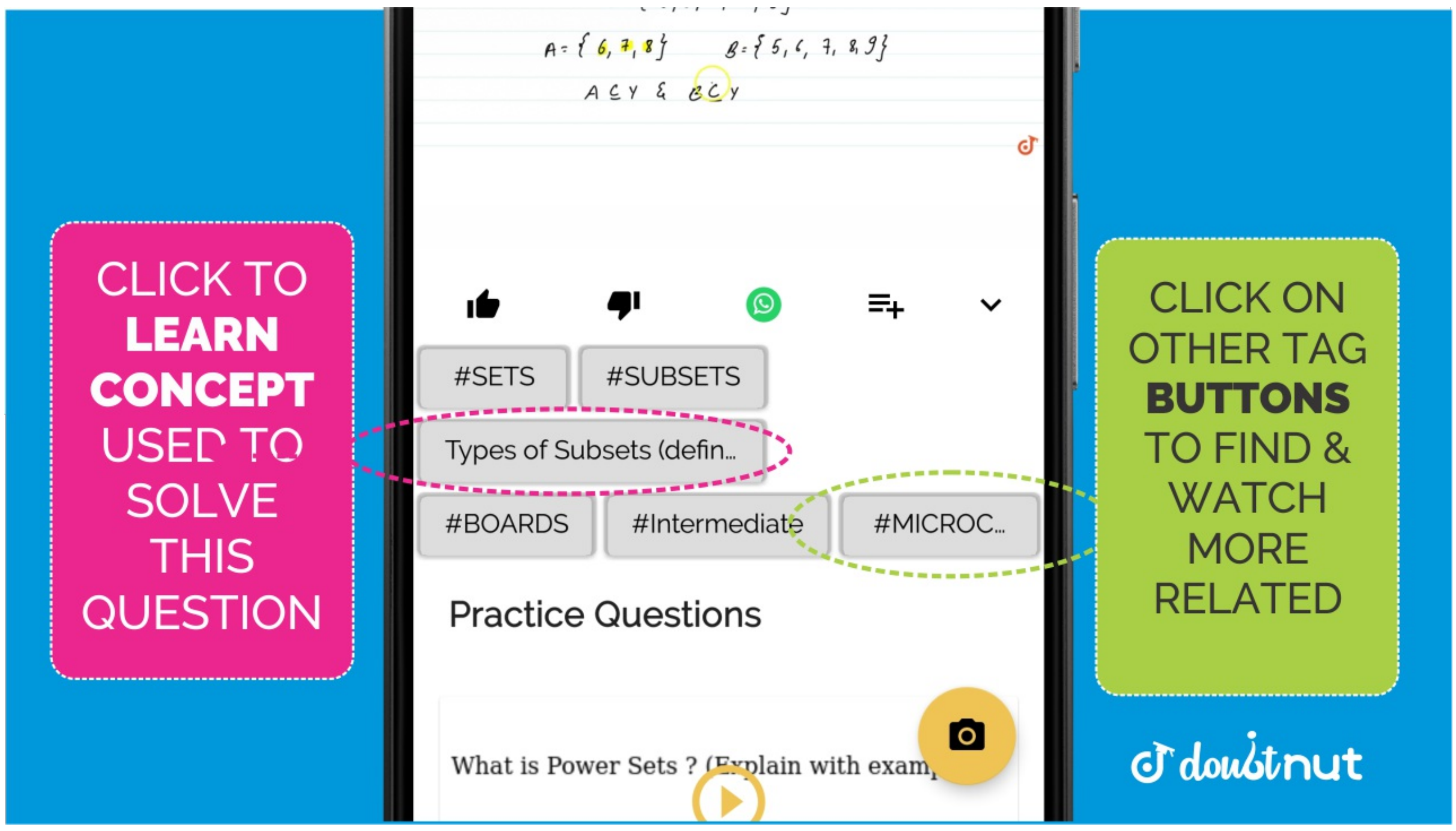
45	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $a, b, andc$ are in A.P. and one root of the equation $ax^2+bc+c=0is2,$ the find the other ro Watch Free Video Solution on Doubtnut
46	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the roots of the quadratic equation $x^2+px+q=0$ are $\tan 30^0 andtan15^0,$ respectively, the the value of $2+q-p\cdot$ Watch Free Video Solution on Doubtnut
47	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the sum of the roots of the equation $\frac{1}{x+a}+\frac{1}{x+b}=1/c$ is zero, the prove that the produ the root is $\left(-\frac{1}{2}\right)\left(a^2+b^2\right)\cdot$ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
48	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Solve the equation $x^2+px+45=0.$ it is given that the squared difference of its roots is eq 144 Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

49	If α, β are the roots of the equation $2x^2 - 35x + 2 = 0$, the find the value of $(2\alpha - 35)^3(2\beta - 35)$ Watch Free Video Solution on Doubtnut
50	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Find a quadratic equation whose product of roots $x_1 and x_2$ is equal to 4 an satisfying the re $\frac{x_1}{x_1 - 1} + \frac{x_2}{x_2 - 1} = 2.$ Watch Free Video Solution on Doubtnut
51	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $p(q - r)x^2 + q(r - p)x + r(p - q) = 0$ has equal roots, then prove that $\frac{2}{q} = \frac{1}{p} + \frac{1}{r}.$ Watch Free Video Solution on Doubtnut
52	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let $\alpha, \beta \in R\cdot$ If α, β^2 are the roots of quadratic equation $x^2 - px + 1 = 0. and \alpha^2, \beta$ are the ro quadratic equation $x^2 - qx + 8 = 0,$ then find $p, q, \alpha, \beta\cdot$ Watch Free Video Solution on Doubtnut
53	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the ratio of the roots of the equation $x^2 + px + q = 0$ are equal to ratio of the roots c equation $x^2 + bx + c = 0$, then prove that $p^{2c} = b^2 q\cdot$ Watch Free Video Solution on Doubtnut
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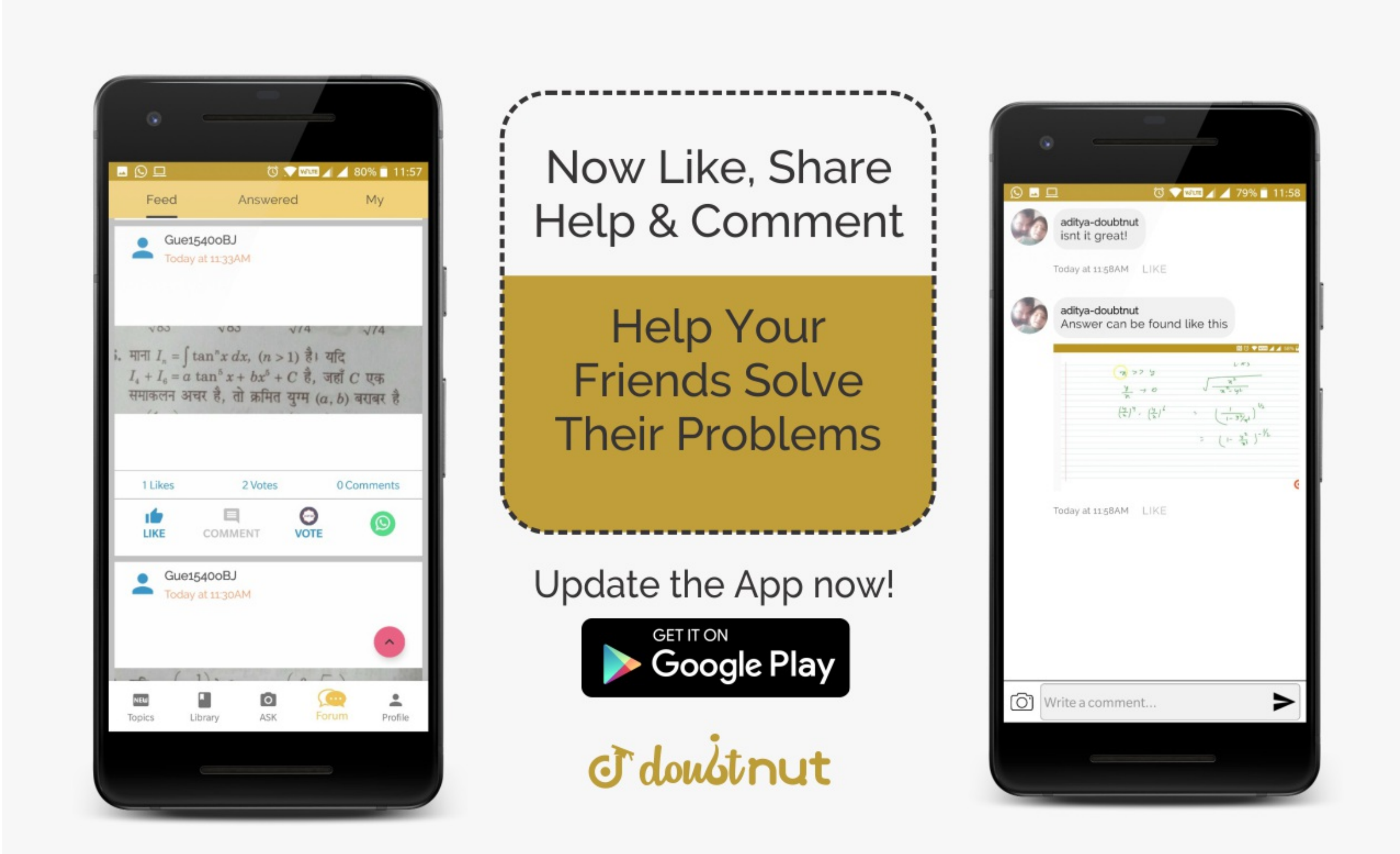
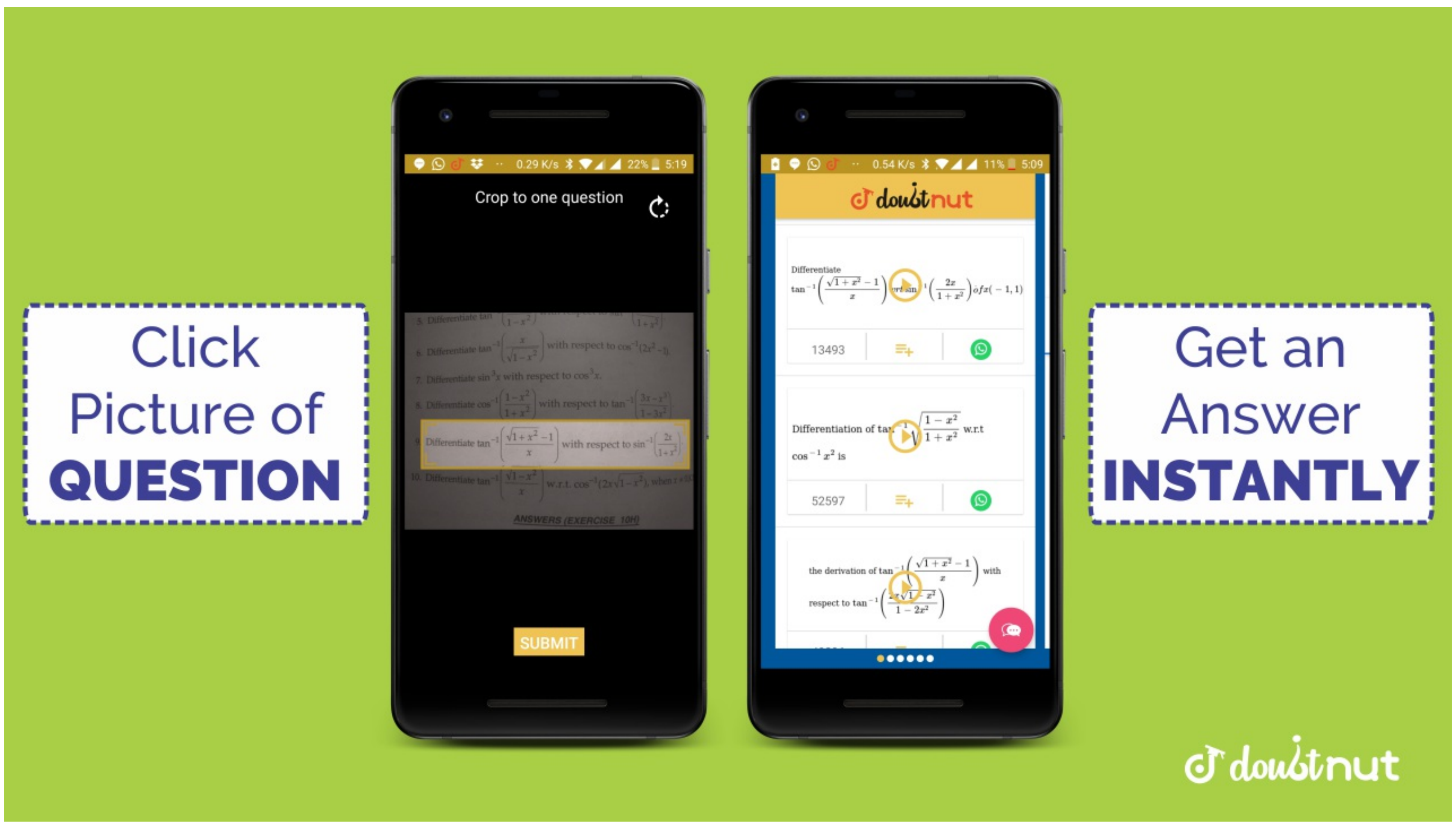


54	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $s\int h\eta, \cos\theta$ be the roots of $ax^2 + bx + c = 0$, then prove that $b^2 = a^2 + 2a \cdot$ Watch Free Video Solution on Doubtnut
55	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If a and $b(\neq 0)$ are the roots of the equation $x^2 + ax + b = 0,$ then find the least valu $x^2 + ax + b(x \in R)\cdot$ Watch Free Video Solution on Doubtnut
56	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the sum of the roots of the equation $(a+1)x^2 + (2a+3)x + (3a+4) = 0$ is -1, then fin product of the roots. Watch Free Video Solution on Doubtnut
57	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Find the value of a for which one root of the quadratic equa $\left(a^2 - 5a + 3\right)x^2 + (3a - 1)x + 2 = 0$ is twice as large as the other. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

58	If the difference between the roots of the equation $x^2 + ax + 1 = 0$ is less then $\sqrt{5}$, then fin set of possible value of $a\cdot$ Watch Free Video Solution on Doubtnut
59	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Find the values of the parameter a such that the rots α, β of the equation $2x^2 + 6x + a = 0$ s the inequality $\alpha/\beta + \beta/\alpha < 2.$ Watch Free Video Solution on Doubtnut
60	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the harmonic mean between roots of $\left(5 + \sqrt{2}\right)x^2 - bx + 8 + 2\sqrt{5} = 0 is 4$, then find the valu $b\cdot$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

61	**EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of lthe equation $2x^2 - 3x - 6 = 0$, find the equation whose roots $\alpha^2 + 2 and \beta^2 + 2$. Watch Free Video Solution on Doubtnut
62	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha \neq \beta and \alpha^2 = 5\alpha - 3 and \beta^2 = 5\beta - 3$. find the equation whose roots are $\alpha / \beta and \beta / \alpha$. Watch Free Video Solution on Doubtnut
63	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of the equation $ax^2 + bx + c = 0$, then find the roots of the equa $ax^2 - bx(x - 1) + c(x - 1)^2 = 0$ in term of $\alpha and \beta$. Watch Free Video Solution on Doubtnut
64	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** Determine the values o m for which equations $3x^2 + 4mx + 2 = 0 and 2x^2 + 3x - 2 = 0$ may ha common root. Watch Free Video Solution on Doubtnut
65	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If $x^2 + 3x + 5 = 0 and ax^2 + bx + c = 0$ have common root/roots and $a, b, c \in N$, then fin minimum value of $a + b + \cdot$ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

66	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If $ax^2 + bx + c = 0 and bx^2 + cx + a = 0$ have a common root and a, b, and c are nonzerc numbers, then find the value of $\left(a^3 + b^3 + c^3\right)/abc$ Watch Free Video Solution on Doubtnut
67	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** a,b,c are positive real numbers forming a G.P. ILf $ax^2 + 2bx + c = 0$and $x^2 + 2ex + f = 0$ ha common root, then prove that $\frac{d}{a}, \frac{e}{b}, \frac{f}{c}$ are in A.P. Watch Free Video Solution on Doubtnut
68	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If equations $x^2 + ax + 12 = 0. x^2 + bx + 15 = 0 and x^2 + (a + b)x + 36 = 0,$ have a common po root, then find the values of $a and b\cdot$ Watch Free Video Solution on Doubtnut
69	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If a, b, p, q are nonzero real numbers, then how many cooman roots would two equa $2a^2x^2 - 2abx + b^2 = 0 and p^2x^2 + 2pqx + q^2 = 0$ have? Watch Free Video Solution on Doubtnut
70	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If $x^2 + px + q = 0 and x^2 + qx + p = 0, (p \neq q)$ have a common roots, show that $1 + p + q = 0$. show that their other roots are the roots of the equation $x^2 + x + pq = 0.$ Watch Free Video Solution on Doubtnut
71	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If α, β, γ are the roots of he euation $x^3 + 4x + 1 = 0,$ then find the value $(\alpha + \beta)^{-1} + (\beta + \gamma)^{-1} + (\gamma + \alpha)^{-1}$. Watch Free Video Solution on Doubtnut

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

If the roots of the equation $x^3 + Px^2 + Qx - 19 = 0$ are each one more that the roots c equation $x^3 - Ax^2 + Bx - C = 0, whereA, B, C, P, andQ$ are constants, then find the valu $A + B + C$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

If α, β, γ are the roots of the equation $x^3 + px^2 + qx + r = 0,$ then find he valu $\left(\alpha - \frac{1}{\beta\gamma}\right)\left(\beta - \frac{1}{\gamma\alpha}\right)\left(\gamma - \frac{1}{\alpha\beta}\right)$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

Equations $x^3 + 5x^2 + px + q = 0andx^3 + 7x^2 + px + r = 0$ have two roots in common. If the root of each equation is x_1andx_2 , respectively, then find the ordered pair $\left(x_1, x_2\right)$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

Let $\alpha + i\beta(\alpha, \beta \in R)$ be a root of the equation $x^3 + qx + r = 0, q, r \in R$. Find a real cubic equa independent of $\alpha and \beta$, whose one roots is 2α.

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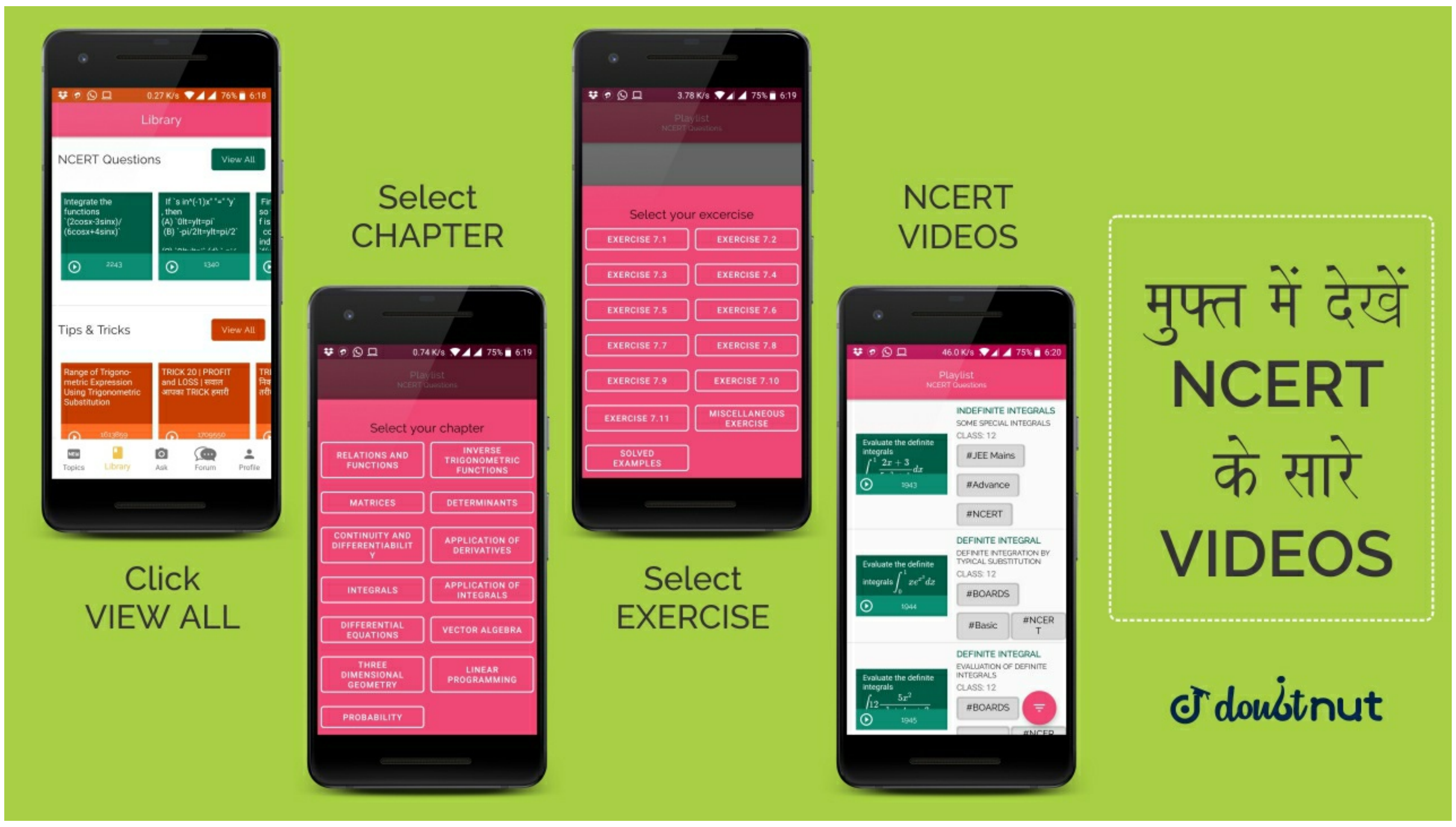
76	**EQUATIONS_Solving Cubic Equation** In equation $x^4 - 2x^3 + 4x^2 + 6x - 21 = 0$ if two its roots are equal in magnitude but opposite find the roots. Watch Free Video Solution on Doubtnut
77	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Solve the equation $x^3 - 13x^2 + 15x + 189 = 0$ if one root exceeds the other by 2. Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
78	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Repeated Roots** If $x - c$ is a factor of order m of the polynomial $f(x)$ of degree `n(1 Watch Free Video Solution on Doubtnut
79	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Find the values of m for which the expression $2x^2 + mxy + 3y^2 - 5y - 2$ can be resolved int rational linear factors. Watch Free Video Solution on Doubtnut
80	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Find he linear factors of $2x^2 - y^2 - x + xy + 2y - 1$. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

81	**EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Find the range of the function $f(x) = x^2 - 2x - 4$. Watch Free Video Solution on Doubtnut
82	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Find the least value of $\frac{\left(6x^2 - 22x + 21\right)}{\left(5x^2 - 18 + 17\right)}$ for real x. Watch Free Video Solution on Doubtnut
83	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Prove that if the equation $x^2 + 9y^2 - 4x + 3 = 0$ is satisfied for real values of $xandy, thenx$ mu between 1 and 3 and$y$ must lie between-1/3 and 1/3. Watch Free Video Solution on Doubtnut

84	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Find the domain and the range of $f(x) = \sqrt{3 - 2x - x^2}$. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression

85	Find the domain and the range of $f(x) = \sqrt{x^2 - 3x + 2}.$ Watch Free Video Solution on Doubtnut
86	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** What is the minimum height of any point on the curve $y = x^2 - 4x + 6$ above the x-axis? Watch Free Video Solution on Doubtnut
87	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** What is the minimum height of any point on the curve $y = -x^2 + 6x - 5$ above the x-axisdv? Watch Free Video Solution on Doubtnut
88	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** Find the largest natural number a for which the maximum value of $f(x) = a - 1 + 2x - x^2$ is sr than the minimum value of $g(x) = x^2 - 2ax + 10 - 2a$. Watch Free Video Solution on Doubtnut
89	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** Let $f(x) = ax^2 + bx + c$ be a quadratic expression having its vertex at (3, -2) and valu $f(0) = 10. F \in df(x)$. Watch Free Video Solution on Doubtnut

90	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** Find the least value of n such that $(n-2)x^2+8x+n+4>0,\ \forall x \in R, where n \in N\cdot$ Watch Free Video Solution on Doubtnut
91	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** If the inequality $\left(mx^2+3x+4\right)/\left(x^2+2x+2\right)<5$ is satisfied for all $x \in R,$ then find the valu $m\cdot$ Watch Free Video Solution on Doubtnut
92	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** If $f(x)=\left(a_1x+b_1\right)^2+\left(a_2x+b_2\right)^2+\ldots+\left(a_nx+b_n\right)^2$, then prove $\left(a_1b_1+a_2b_2+\ +a_nb_n\right)^2 \leq (a12+a22+\ +an2)^{b12+b22++bn2}.$ Watch Free Video Solution on Doubtnut
93	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** If c is positive and $2ax^2+3bx+5c=0$ does not have aby real roots, then prove $2a-3b+5b>0.$ Watch Free Video Solution on Doubtnut
94	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** If $ax^2+bx=6=0$ does not have distinct real roots, then find the least value of $3a+b\cdot$ Watch Free Video Solution on Doubtnut
95	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function** A quadratic trinomial $P(x)=ax^2+bx+c$ is such that the equation $P(x)=x$ has no real r Prove that in this case equation $P(P(x))=x$ has no real roots either.

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96

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function

Prove that for real values of x, $\left(ax^2 + 3x - 4\right)/\left(3x - 4x^2 + a\right)$ may have any value provided between 1 and 7.

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97

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function

Let $a, bandc$ be real numbers such that $a + 2b + c = 4$. Find the maximum value of $(ab + bc$

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98

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Function

Prove that for all real values of $xandy, x^2 + 2xy + 3y^2 - 6x - 2y \geq -11.$

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99

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

Find the values of a for whilch the equation $\sin^4 x + a\sin^2 x + 1 = 0$ will have ea solution.

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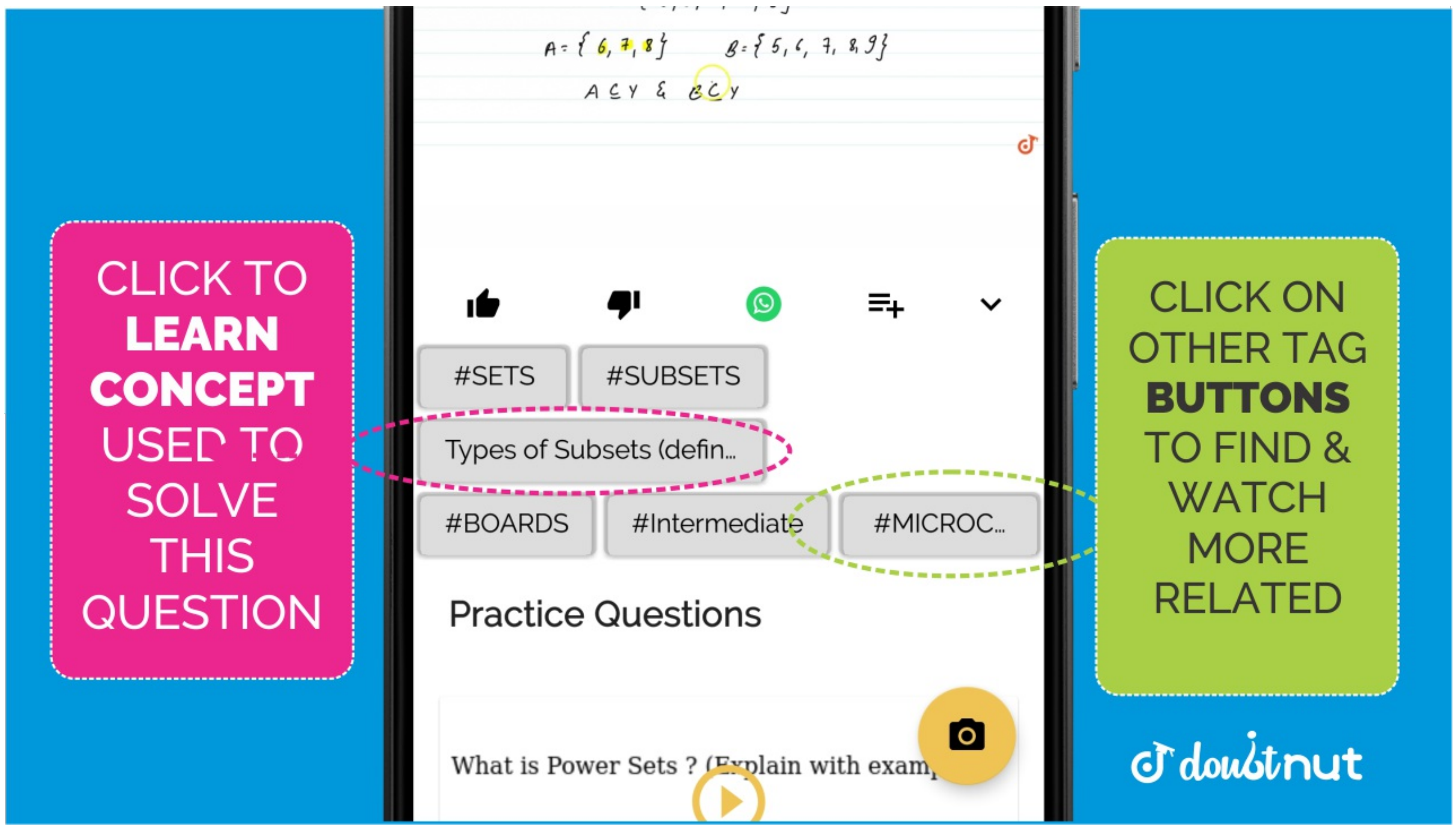
100

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

If $\left(x^2 + x + 2\right)^2 - (a - 3)\left(x^2 + x + 1\right)\left(x^2 + x + 2\right) + (a - 4)\left(x^2 + x + 1\right)^2 = 0$ has at least one

	then find the complete set of values of a· Watch Free Video Solution on Doubtnut
101	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If α is a real root of the quadratic equation $ax^2 + bx + c = 0 and \beta$ ils a real roo $-ax^2 + bx + c = 0,$ then show that there is a root γ of equation $(a/2)x^2 + bx + c = 0$ whicl between $\alpha \& \beta$ Watch Free Video Solution on Doubtnut
	
102	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** Find all the value of m for which the equation $\sin^2 x - (m - 3)\sin x + m = 0$ has real roots. Watch Free Video Solution on Doubtnut
103	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** Find the value of a for which the equation a $\sin\left(x + \frac{\pi}{4}\right) = \sin 2x + 9$ will have real solution. Watch Free Video Solution on Doubtnut
104	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** For what real values of a do the roots of the equation $x^2 - 2x - \left(a^2 - 1\right) = 0$ lie between the of the equation $x^2 - 2(a + 1)x + a(a - 1) = 0.$ Watch Free Video Solution on Doubtnut

105	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Find the value of a for which $ax^2 + (a - 3)x + 1 < 0$ for at least one positive real x . Watch Free Video Solution on Doubtnut
106	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If $x^2 + 2ax + a < 0 \forall x \in [1, 2]$, the find the values of $a\cdot$ Watch Free Video Solution on Doubtnut
107	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If $\left(y^2 - 5y + 3\right)\left(x^2 + x + 1\right) < 2x$ for all $x \in R$, then fin the interval in which y lies. Watch Free Video Solution on Doubtnut
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108	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Find the values of a for which $4^t - (a - 4)2^t + (9/4)a < 0, \ \forall t \in (1, 2)\cdot$ Watch Free Video Solution on Doubtnut
109	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If the fraction $\dfrac{x^3 + (a - 10)x^2 - x + a - 6}{x^3 + (a - 6)x^2 - x + a - 10}$ reduces to a quotient of two functions then a equals

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110	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find the value of $i^n + i^{n+1} + i^{n+2} + i^{n+3}$ for all $n \in N$. ⦿ Watch Free Video Solution on Doubtnut
111	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find the value of $1 + i^2 + i^4 + i^6 + \; + i^{2n}$ ⦿ Watch Free Video Solution on Doubtnut
112	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Show that the polynomial $x^{4p} + x^{4q+1} + x^{4r+2} + x^{4s+3}$ is divisible $x^3 + x^2 + x + 1, where p, q, r, s \in n$. ⦿ Watch Free Video Solution on Doubtnut
113	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Solve: $ix^2 - 3x - 2i = 0,$ ⦿ Watch Free Video Solution on Doubtnut
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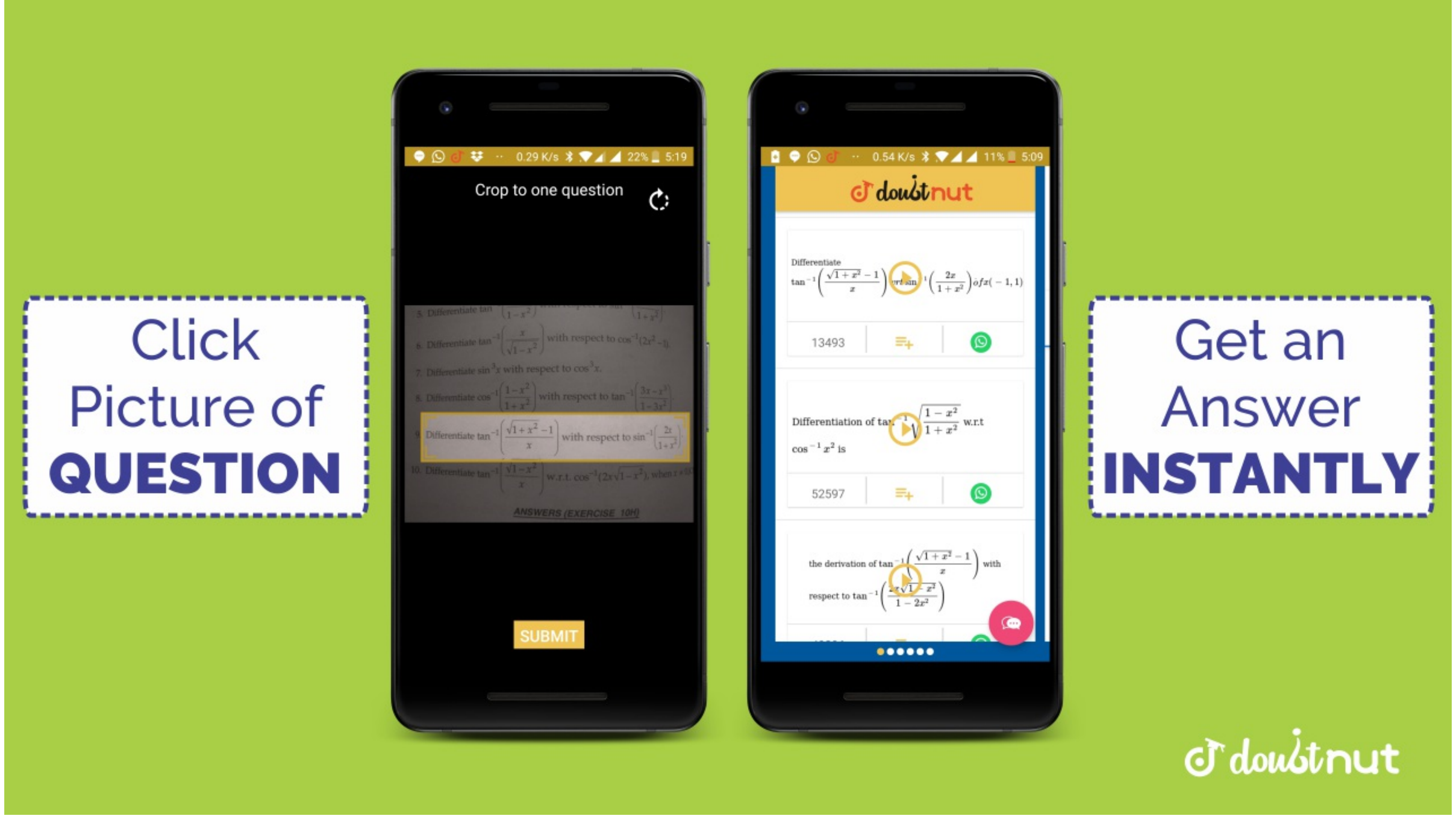
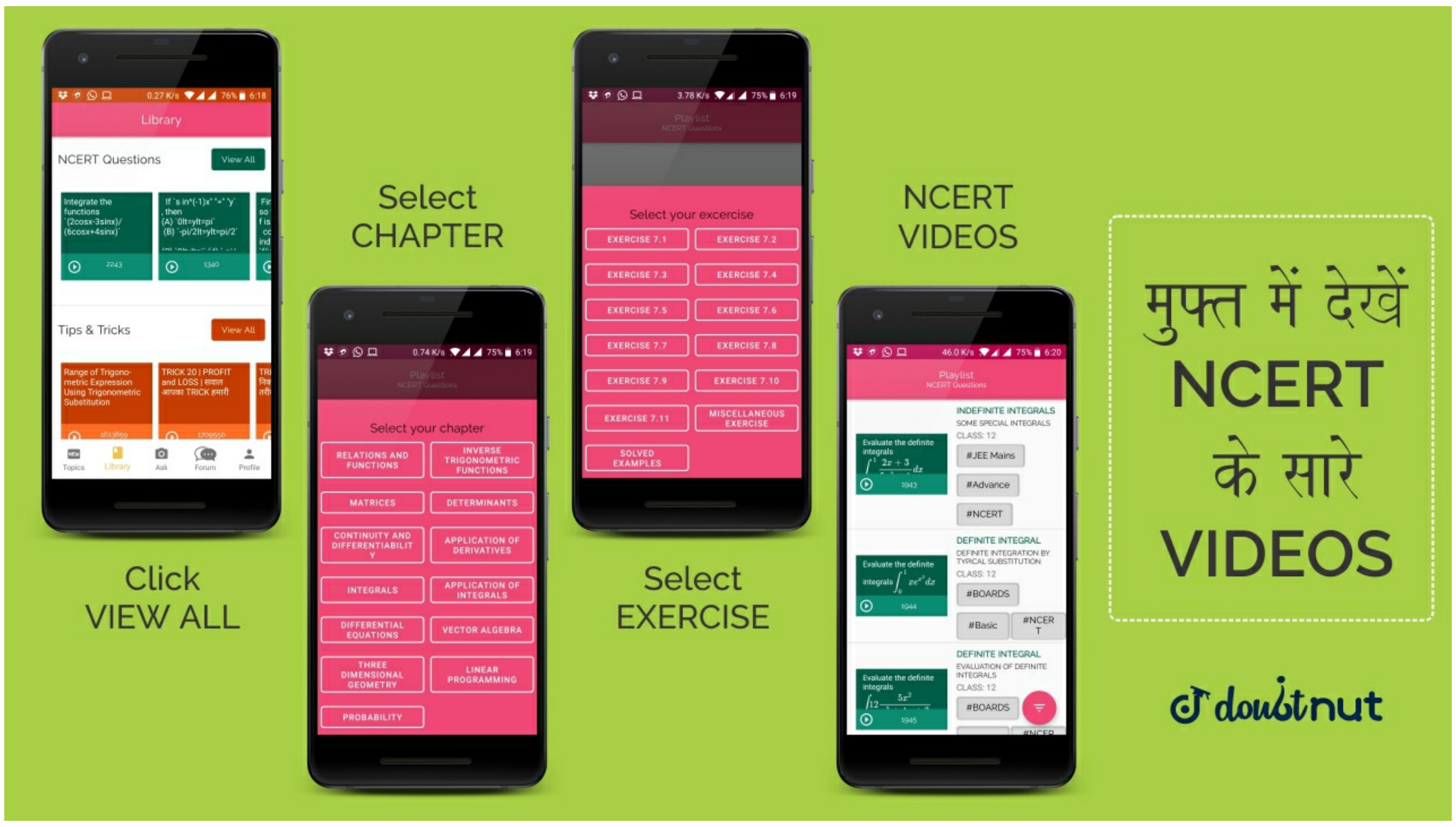
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

114	Express each one of the following in the standard form $a + ib \cdot \frac{5 + 4i}{4 + 5i}$ Watch Free Video Solution on Doubtnut
115	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z = 4 + i\sqrt{7}$, then find the value of $z^2 - 4z^2 - 9z + 91$. Watch Free Video Solution on Doubtnut
116	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $(a + b) - i(3a + 2b) = 5 + 2i$, then find $aandb \cdot$ Watch Free Video Solution on Doubtnut
117	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Given that $x, y \in R$, solve: $\frac{x}{1 + 2i} + \frac{y}{3 + 2i} = \frac{5 + 6i}{8i - 1}$ Watch Free Video Solution on Doubtnut
118	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find the ordered pair (x, y) for which $x^2 - y^2 - i(2x + y) = 2i \cdot$ Watch Free Video Solution on Doubtnut
119	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $\sqrt{x + iy} = \pm(a + ib)$, then find $\sqrt{x - iy}$. Watch Free Video Solution on Doubtnut

doubtnut पढ़ना हुआ आसान	
120	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If the sum of square of roots of the equation $x^2+(p+iq)x+3i=0$ is 8, then find the valu $pandqj, wherepandq$ are real. Watch Free Video Solution on Doubtnut
121	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $(x+iy)^3=u+iv$, then show that $\frac{u}{x}+\frac{v}{y}=4\left(x^2-y^2\right)$ Watch Free Video Solution on Doubtnut
122	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Let z be a complex number satisfying the equation $z^2-(3+i)z+m+2i=0, wherem$ Suppose the equation has a real root. Then root non-real root. Watch Free Video Solution on Doubtnut
123	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z\neq 0$ is a complex njmber, then prove that $Re(z)=0\Rightarrow Im\left(z^2\right)=0.$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

124	Find the square roots of the following: (i) $7 - 24i$ Watch Free Video Solution on Doubtnut
125	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find all possible values of $\sqrt{i} + \sqrt{-i}$. Watch Free Video Solution on Doubtnut
126	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Solve for $z : z^2 - (3 - 2i)z + (5i - 5)$. Watch Free Video Solution on Doubtnut
127	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** Prove that the triangle formed by the points $1, \frac{1+i}{\sqrt{2}}, andi$ as vertices in the Argand diagra isosceles. Watch Free Video Solution on Doubtnut
128	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** Write the complex numbers in polar form: $1 - i$ Watch Free Video Solution on Doubtnut

129	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** If $z = re^{i\theta}$, then prove that $\left|e^{iz}\right| = e^{-r\sin\theta}$ Watch Free Video Solution on Doubtnut
130	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** Prove that $\tan\left(i\log_e\left(\frac{a-ib}{a+ib}\right)\right) = \frac{2ab}{a^2-b^2}$ (where $a, b \in R^+$) Watch Free Video Solution on Doubtnut
131	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** Find the real part of $(1-i)^{-i}$. Watch Free Video Solution on Doubtnut
पढ़ना हुआ आसान	
132	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** Show that $e^{2mi\theta}\left(\frac{i\cot\theta+1}{i\cot\theta-1}\right)^m = 1.$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number

133	It is given that complex numbers $z_1 and z_2 satiy \left|z_1\right| 2 and \left|z_2\right| = 3.$ If the included angled of corresponding vectors is 60^0 , then find the value of $\left|\frac{z_1 + z_2}{z_1 - z_2}\right|$. Watch Free Video Solution on Doubtnut
134	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Representation Of A Complex Number** $Z_1 \neq Z_2$ are two points in an Argand plane. If $a\left|Z_1\right| = b\left|Z_2\right|$, then prove that $\frac{aZ_1 - bZ_2}{aZ_1 + bZ_2}$ is p imaginary. Watch Free Video Solution on Doubtnut
135	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** Find real value of $x and y$ for which the complex numbers $-3 + ix^2 y and x^2 + y + 4i$ are conjuga each other. Watch Free Video Solution on Doubtnut
136	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If $(x + iy)^5 = p + iq,$ then prove that $(y + ix)^5 = q + ip.$ Watch Free Video Solution on Doubtnut
137	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** Find the value of θ if $(3 + 2i\sin\theta)/(1 - 2i\sin\theta)$ is purely real or purely imaginary. Watch Free Video Solution on Doubtnut
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138	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If z is a complex number such taht $z^2 = (\bar{z})^2,$ then find the location of z on the Argand plan Watch Free Video Solution on Doubtnut
139	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If $\left(\frac{1+i}{1-i}\right)^m = 1,$ then find the least positive integral value of $m\cdot$ Watch Free Video Solution on Doubtnut
140	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** Consider two complex numbers $\alpha and \beta$ as $\alpha = [(a+bi)/(a-bi)]^2 + [(a-bi)/(a+bi)]^2$, where in R and $\beta = (z-1)/(z+1), where \|z\| = 1,$ then find the correct statement: both $\alpha and \beta$ are p real both $\alpha and \beta$ are purely imaginary α is purely real andβ is purely imaginary β is purely and α is purely imaginary Watch Free Video Solution on Doubtnut
141	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** Find the complex number z satisfying $Re\left(z^2 = 0\right), \|z\| = \sqrt{3}.$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number

142

Solve the equation $|z| = z + 1 + 2i \cdot$

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143

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

If $(a + ib)(c + id)(e + \text{ if })(g + ih) = A + iB$, then show $\left(a^2 + b^2\right)\left(c^2 + d^2\right)\left(e^2 + f^2\right)\left(g^2 + h^2\right) = A^2 + B^2$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

If $z = x + iyandw = (1 - iz)/(z - i)$, then show that $|w|1z$ is purely real.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

If $\alpha and \beta$ are different complex numbers with $|\beta| = 1,$ then find the value of $\left|(\beta - \alpha)/\left(1 - \bar{\alpha}\beta\right)\right|$

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146

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

Solve the equation $z^3 = z(z \neq 0) \cdot$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

EQUATIONS_Properties Of Modulus

147

If z_1, z_2, z_3, z_4 are the affixes of four point in the Argand plane, z is the affix of a point such

$|z - z_1| = |z - z_2| = |z - z_3| = |z - z_4|$, then prove that z_1, z_2, z_3, z_4 are concyclic.

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148

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

If $|z| = 1$ and let $\omega = \dfrac{(1 - z)^2}{1 - z^2}$, then prove that the locus of ω is equivalent to $|z - 2| = |z + 2|$

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149

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

Let $z = x + iy$. Then find the locus of $P(z)$ such that $\dfrac{1 + \bar{z}}{z} \in R$.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

Identify locus z if $Re(z + 1) = |z - 1|$

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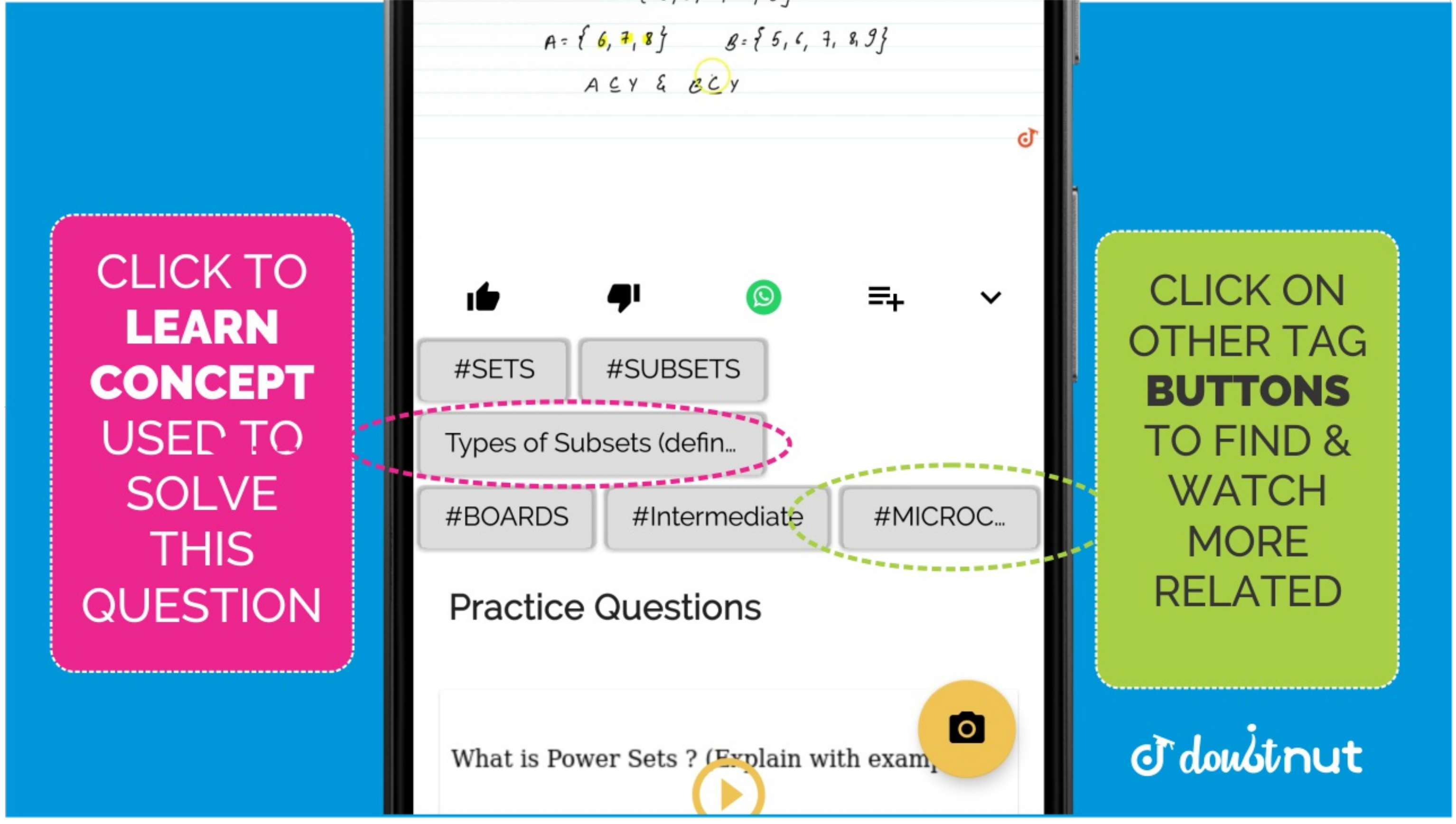
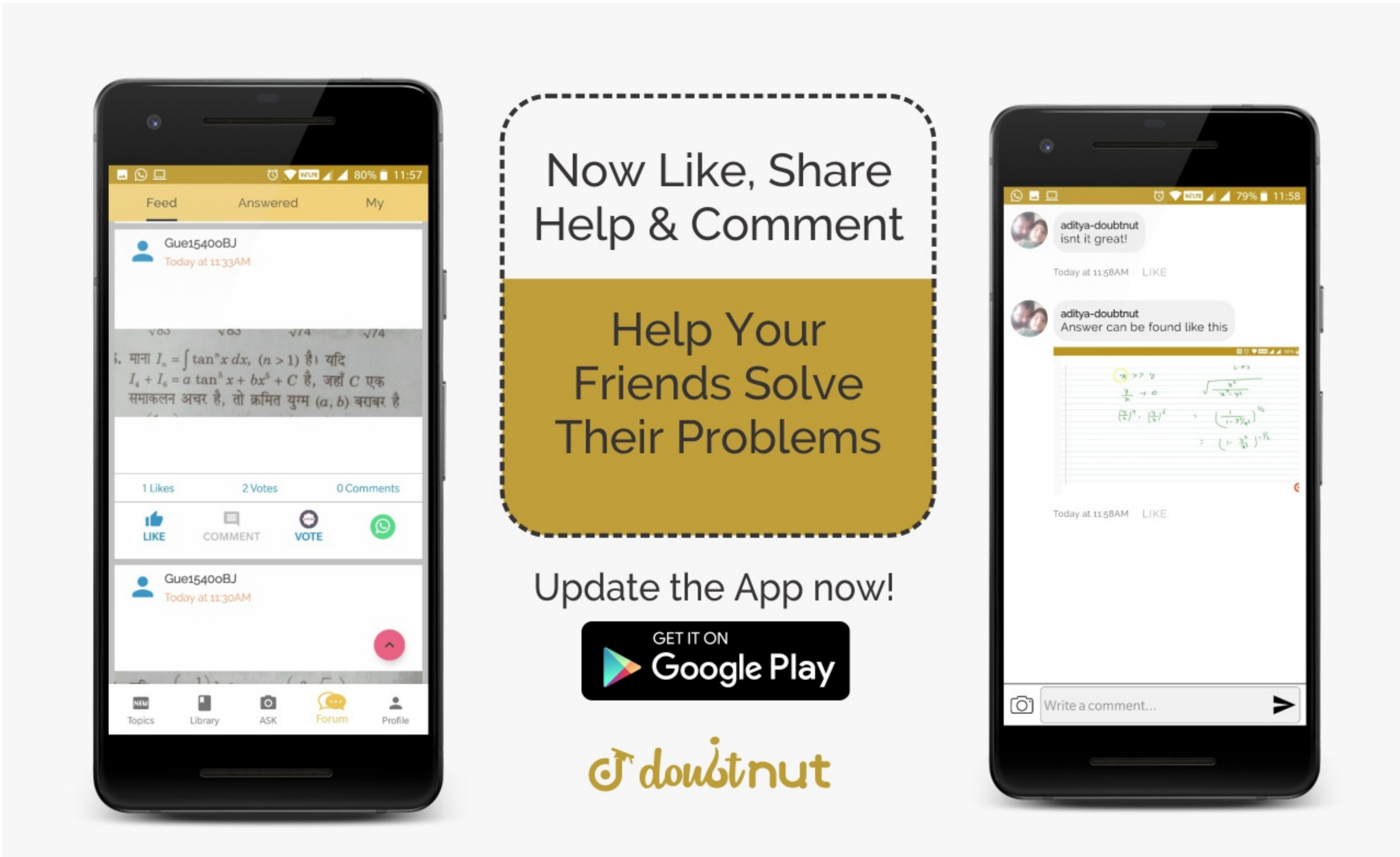
151	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\left|z_1\right| = 1, \left|z_2\right| = 2, \left|z_3\right| = 3, and \left|9z_1z_2 + 4z_1z_3 + z_2z_3\right| = 12,$ then find the value of $\left|z_1 + z_2 + z\right.$ Watch Free Video Solution on Doubtnut
152	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\|z - iRe(z)\| = \|z - Im(z)\|$, then prove that z , lies on the bisectors of the quadrants. Watch Free Video Solution on Doubtnut
153	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Show that $\left(x^2 + y^2\right)^4 = \left(x^4 - 6x^2y^2 + y^4\right)^2 + \left(4x^3y - 4xy^3\right)^2.$ Watch Free Video Solution on Doubtnut
154	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $\left|\left(\left(\bar{z}_1\right) - 2\left(\bar{z}_2\right)\right)/\left(2 - z_1\left(\bar{z}_2\right)\right)\right| = 1$ and $\left|z_2\right| \neq 1$,where z_1 and z_2 are complex numbers. S that $\left|z_1\right| = 2.$ Watch Free Video Solution on Doubtnut
155	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z_1 and z_2$ are complex numbers and $u = \sqrt{z_1z_2}$, then prove $\left|z_1\right| + \left|z_2\right| = \left|\frac{z_1 + z_2}{2} + u\right| + \left|\frac{z_1 + z_2}{2} - u\right|$ Watch Free Video Solution on Doubtnut

	
156	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\left(\sqrt{8}+i\right)^{50} = 3^{49}(a+ib)$, then find the value of a^2+b^2. Watch Free Video Solution on Doubtnut
157	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Find the complex number satisfying the system of equations $z^3+\omega^7 = 0andz^5\omega^{11} = 1.$ Watch Free Video Solution on Doubtnut
158	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** For any complex number z find the minimum value of $|z| + |z - 2i|$ Watch Free Video Solution on Doubtnut
159	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If is any complex number such that $|z+4| \leq 3,$ then find the greatest value of $|z+1|$. Watch Free Video Solution on Doubtnut
160	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Find the greatest and the least value of $\left|z_1+z_2\right|$ if$z_1 = 24+7iand\left|z_2\right| = 6.$ Watch Free Video Solution on Doubtnut

161	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Find the minimum value of $\|z-1$ if $\|\|z-3\|-\|z+1\|\ \ \|\ =2.$ Watch Free Video Solution on Doubtnut
	
162	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** if z is complex no satisfies the condition | Z |>3. Then find the least value of | Z+ 1/ Z | Watch Free Video Solution on Doubtnut
163	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If z is a complex number, then find the minimum value of $\|z\|+\|z-1\|+\|2z-3\|\cdot$ Watch Free Video Solution on Doubtnut
164	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\left\|z_1-1\right\|\leq 1,\ \left\|z_2-2\right\|\leq 2,\ \left\|z_3-3\right\|\leq 3,$ then find the greatest value of $\left\|z_1+z_2+z_3\right\|\cdot$ Watch Free Video Solution on Doubtnut
165	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Prove that the distance of the roots of the equa $\|\sin\theta_1\|z^3+\|\sin\theta_2\|z^2+\|\sin\theta_3\|z+\|\sin\theta_4\|=3omz=0$ is greater than $2/3$.

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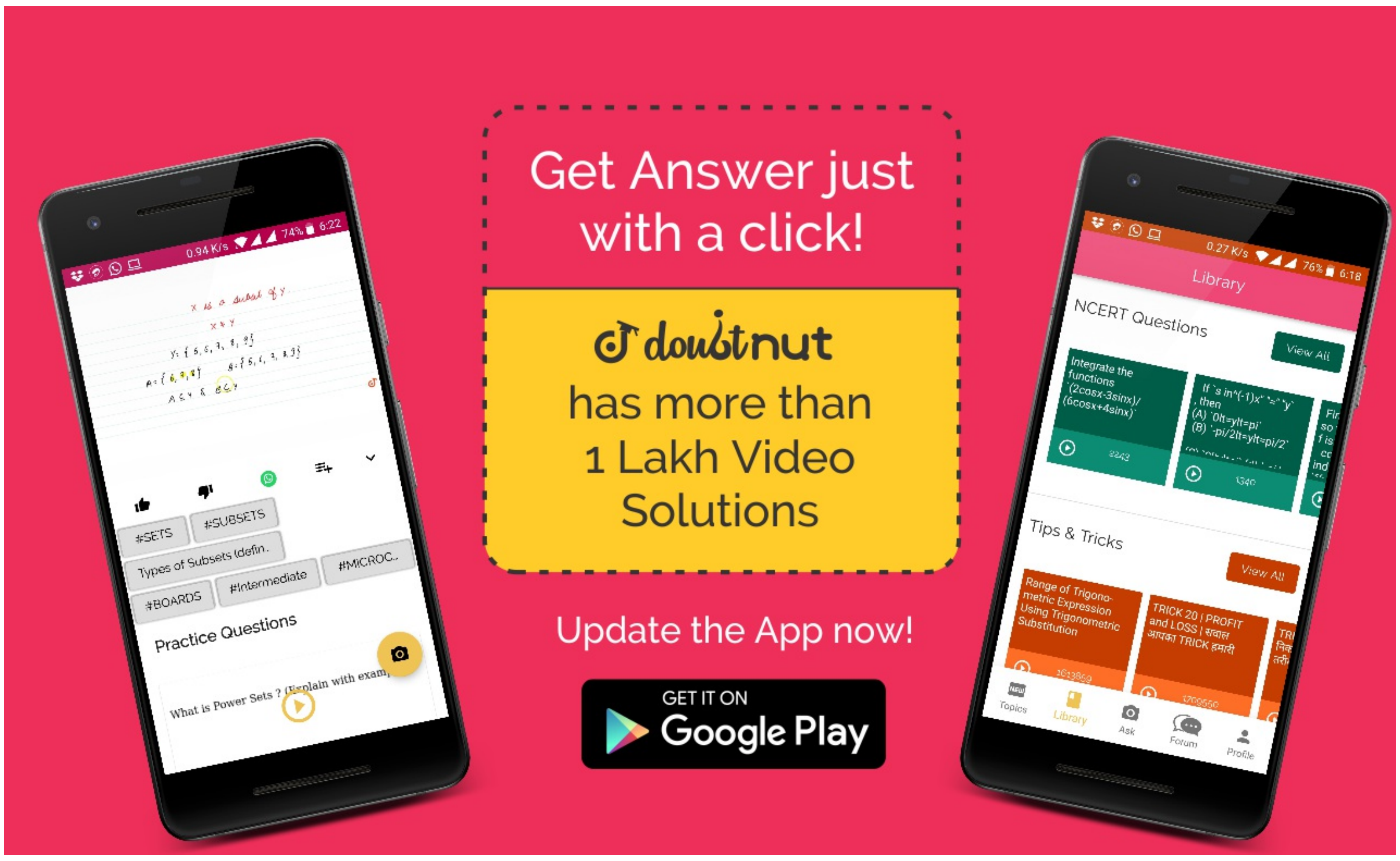
166	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z_1 and z_2$ are two complex numbers and $c > 0$, then prove $\left\|z_1 + z_2\right\|^2 \leq (1 + c)\left\|z_1\right\|^2 + \left(1 + c^{-1}\right)\left\|z_2\right\|^2.$ Watch Free Video Solution on Doubtnut
167	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the amplitude of $\sin\alpha + i(1 - \cos\alpha)$ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
168	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the modulus, argument, and the principal argument of the complex numb $\frac{i - 1}{i\left(1 - \cos\left(\frac{2\pi}{5}\right)\right) + \frac{\sin(2\pi)}{5}}$ Watch Free Video Solution on Doubtnut
169	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the principal argument of the complex number $\frac{(1 + i)^5\left(1 + \sqrt{3i}\right)^2}{-2i\left(-\sqrt{3} + i\right)}$

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170	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the principal argument of the complex number $\frac{\sin(6\pi)}{5}+i\left(1+\frac{\cos(6\pi)}{5}\right)$. Watch Free Video Solution on Doubtnut
171	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $z_1, z_2 and z_3, z_4$ are two pairs of conjugate complex numbers, hen find the valu $a r g\left(z_1/z_4\right)+arg\left(z_2/z_3\right)\cdot$ a Watch Free Video Solution on Doubtnut
172	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the value of expression $\left(\frac{\cos\pi}{2}+i\sin\left(\frac{\pi}{2}\right)\right)\left(\cos\left(\frac{\pi}{2^2}\right)+i\sin\left(\frac{\pi}{2^2}\right)\right)......\infty$ Watch Free Video Solution on Doubtnut
173	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** if $\left\|z_1+z_2\right\|=\left\|z_1\right\|+\left\|z_2\right\|$, then prove that $arg\left(z_1\right)=arg\left(z_2\right)$ if $\left\|z_1-z_2\right\|=\left\|z_1\right\|+\left\|z_2\right\|$, then p that $arg\left(z_1\right)=arg\left(z_2\right)=\pi$ Watch Free Video Solution on Doubtnut

174	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $arg\left(z_1\right) = 170^0 and arg\left(z_2\right) = 70^0$, then find the principal argument of $z_1 z_2$. Watch Free Video Solution on Doubtnut
175	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $z_1 and z_2$ are conjugate to each other then find $arg\left(-z_1 z_2\right)$. Watch Free Video Solution on Doubtnut
176	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the point of intersection of the curves $arg(z - 3i) = \frac{3\pi}{4} and arg(2z + 1 - 2i) = \pi/4$. Watch Free Video Solution on Doubtnut
177	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Let $z and w$ be two nonzero complex numbers such that $\lvert z\rvert = \lvert w\rvert and arg(z) + arg(w) = \pi$. prove that $z = -\bar{w}$. Watch Free Video Solution on Doubtnut
178	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Let $z = x + iy$ be a complex number, where $x and y$ are real numbers. Let $A and B$ be the defined by $A = \{z : \lvert z\rvert \leq 2\} and B = \left\{z : (1 - i)z + (1 + i)\bar{z} \geq 4\right\}$. Find the area of region $A \cap B$

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179	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the area bounded by $\lvert argz \rvert \leq \pi/4$ and $\lvert z - 1 \rvert < \lvert z - 3 \rvert$. ⦿ Watch Free Video Solution on Doubtnut
180	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem** Express the following in $a + ib$ form: $\dfrac{(\cos 2\theta - i\sin 2\theta)^4(\cos 4\theta + i\sin 4\theta)^{-5}}{(\cos 3\theta + i\sin 3\theta)^{-2}(\cos 3\theta - i\sin 3\theta)^{-9}}$ ⦿ Watch Free Video Solution on Doubtnut
181	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem** If $z = \left(\dfrac{\sqrt{3}}{2} + \dfrac{i}{2}\right)^5 + \left(\dfrac{\sqrt{3}}{2} - \dfrac{i}{2}\right)^5$, then prove that $Im(z) = 0$. ⦿ Watch Free Video Solution on Doubtnut
182	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem** Prove that the roots of the equation $x^4 - 2x^2 + 4 = 0$ forms a rectangle. ⦿ Watch Free Video Solution on Doubtnut
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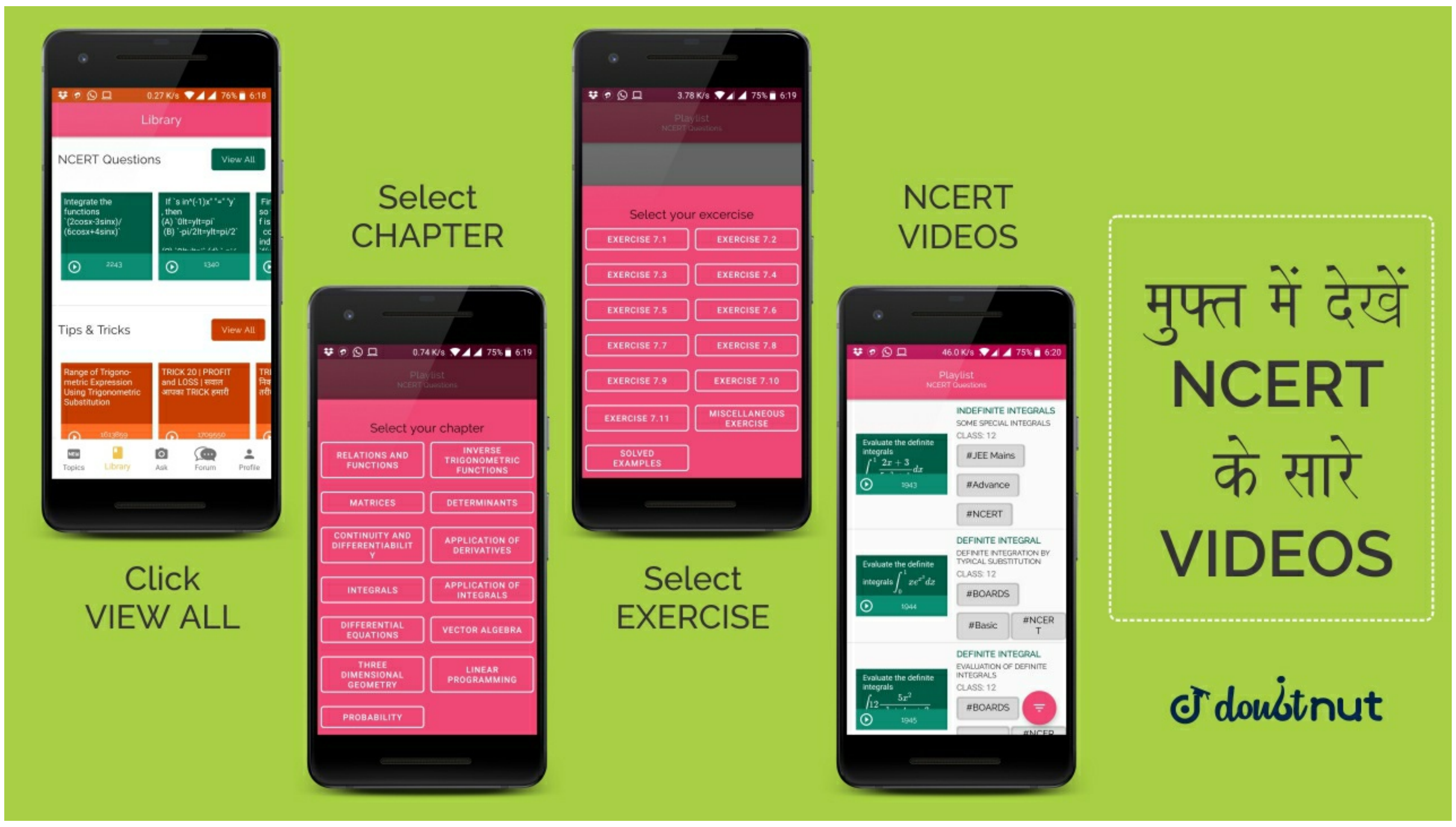
183	**EQUATIONS_De Moivres Theorem** If $z + 1/z = 2\cos\theta$, prove that $\left|\left(z^{2n} - 1\right)/\left(z^{2n} + 1\right)\right| = |\tan n\theta|$ Watch Free Video Solution on Doubtnut
184	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_De Moivres Theorem** If $z = \cos\theta + i\sin\theta$ is a root of the equation $a_0z^n + a_2z^{n-2} + \ + a_{n-1}z^{+}a_n = 0$, then prove $a_0 + a_1\cos\theta + a_2^{\cos 2}\theta + \ + a_n\cos n\theta = 0\ a_1\sin\theta + a_2^{\sin 2}\theta + \ + a_n\sin n\theta = 0$ Watch Free Video Solution on Doubtnut
185	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Cube Roots Of Unity** If ω is a cube root of unity, then find the value of the following: $\left(1 + \omega - \omega^2\right)\left(1 - \omega + \omega^2\right)$ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
186	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Cube Roots Of Unity** If ω is a cube root of unity, then find the value of the following: $\frac{a + b\omega + c\omega^2}{b + c\omega + a\omega^2} + \frac{a + b\omega + c\omega}{c + c\omega + a\omega}$ Watch Free Video Solution on Doubtnut
187	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Cube Roots Of Unity** If ω is a cube root of unity, then find the value of the following: $(1 - \omega)\left(1 - \omega^2\right)\left(1 - \omega^4\right)\left(1 - \omega\right.$

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188	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** Solve the equation $(x-1)^3+8=0$ in the set C of all complex numbers. Watch Free Video Solution on Doubtnut
189	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** If n is n odd integer that is greater than or equal to 3 but not a multiple of 3, then prove $(x+1)^n=x^n-1$ is divisible by $x^3+x^2+x\cdot$ Watch Free Video Solution on Doubtnut
190	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** ω is an imaginary root of unity. Prove that $\left(a+b\omega+c\omega^2\right)^3+\left(a+b\omega^2+c\omega\right.$ $=(2a-b-c)(2b-a-c)(2c-a-b)\cdot$ Watch Free Video Solution on Doubtnut
191	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** ω is an imaginary root of unity. Prove that If $a+b+c=0,$ then prove $\left(a+b\omega+c\omega^2\right)^3+\left(a+b\omega^2+c\omega^{\square}\right)^3=27ab\cdot$ Watch Free Video Solution on Doubtnut

192	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** Find the complex number ω satisfying the equation $z^3 = 8i$ and lying in the second quadra the complex plane. Watch Free Video Solution on Doubtnut
193	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** When the polynomial $5x^3 + Mx + N$ is divided by $x^2 + x + 1$, the remainder is 0. Then fin value of $M + N$. Watch Free Video Solution on Doubtnut
194	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** if$\omega and \omega^2$ are the nonreal cube roots of unity and $[1/(a+\omega)] + [1/(b+\omega)] + [1/(c+\omega)] =$ and $\left[1/(a+\omega)^2\right] + \left[1/(b+\omega)^2\right] + \left[1/(c+\omega)^2\right] = 2\omega$, then find the value $[1/(a+1)] + [1/(b+1)] + [1/(c+1)]$. Watch Free Video Solution on Doubtnut
195	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Find the relation if z_1, z_2, z_3, z_4 are the affixes of the vertices of a parallelogram taken in ord Watch Free Video Solution on Doubtnut
196	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If z_1, z_2, z_3 are three nonzero complex numbers such that $z_3 = (1-\lambda)z_1 + \lambda z_2 where \lambda \in R$ - then prove that points corresponding to $z_1, z_2 and z_3$ are collinear . Watch Free Video Solution on Doubtnut
197	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let z_1, z_2, z_3 be three complex numbers and a, b, c be real numbers not all zero, such $a + b + c = 0 and az_1 + bz_2 + cz_3 = 0.$ Show that z_1, z_2, z_3 are collinear. Watch Free Video Solution on Doubtnut

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

In $ABC, A\left(z_1\right), B\left(z_2\right), andC\left(z_3\right)$ are inscribed in the circle $|z| = 5.$ If $H\left(z_n\right)$ be the orthocenr triangle ABC , then find $z_n.$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

Let $A\left(z_1\right)$ and $\left(z_2\right)$ represent two complex numbers on the complex plane. Suppos complex slope of the line joining A and B is defined as $\dfrac{z_1 - z_2}{\bar{z}_1 - \bar{z}_2}$.If the line l_1, with complex s ω_1, and l_2, with complex slope $omeg_2$, on the complex plane are perpendicular then prove $\omega_1 + \omega_2 = 0.$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

If z_1, z_2, z_3 are three complex numbers such that $5z_1 - 13z_2 + 8z_3 = 0,$ then prove

$$\begin{bmatrix} z_1 & \left(\bar{z}\right)_1 & 1 \\ z_2 & \left(\bar{z}\right)_2 & 1 \\ z_3 & \left(\bar{z}\right)_3 & 1 \end{bmatrix} = 0$$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

201	If $z = z_0 + A\left(\bar{z} - \left(\bar{z}_0\right)\right)$, $whereA$ is a constant, then prove that locus of z is a straight line. Watch Free Video Solution on Doubtnut
202	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let vertices of an acute-angled triangle are $A\left(z_1\right), B\left(z_2\right), andC\left(z_3\right)$. If the origin O orthocentre of the triangle, then prove that $z_1(\bar{z})_2 + (\bar{z})_1 z_2 = z_2(\bar{z})_3 + (\bar{z})_2 z_3 = z_3(\bar{z})_1 + (\bar{z}$ Watch Free Video Solution on Doubtnut
203	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Show that the equation of a circle passing through the origin and having intercepts aan real and imaginary axes, respectively, on the argand plane is given by $z\bar{z} = aa(Rez) + b(Imz$ Watch Free Video Solution on Doubtnut
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204	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Intercept made by the circle $z\bar{z} + \bar{a} + a\bar{z} + r = 0$ on the real axis on complex plane is $\sqrt{(a +}$ b. $\sqrt{(a + \bar{a})^2 - r}$ c. $\sqrt{(a + \bar{a})^2 - 4r}$ d. $\sqrt{(a + \bar{a})^2 - 4r}$ Watch Free Video Solution on Doubtnut
205	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Prove that $\left\|Z - Z_1\right\|^2 + \left\|Z - Z_2\right\|^2 = a$ will represent a real circle [with center $\left(\left\|Z_1 + Z_2\right\|^{/}2 + \right.$

	the Argand plane if $2a \geq \lvert Z_1 - Z_1 \rvert^2$ Watch Free Video Solution on Doubtnut
206	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Two different non-parallel lines cut the circle $\lvert z\rvert = r$ at points a, b, c and d, respectively. P that these lines meet at the point given by $\dfrac{a^{-1}+b^{-1}-c^{-1}-d^{-1}}{a^{-1}b^{-1}-c^{-1}d^{-1}}$ Watch Free Video Solution on Doubtnut
207	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Prove that the circles $z\bar{z} + z(\bar{a})_1 + \bar{z}(a)_1 + b_1 = 0, b_1 \in R$ and $z\bar{z} + z(\bar{a})_2 + \bar{z}a_2 + b_2k = 0, b + $ will intersect orthogonally if $2Re\left(a_1(\bar{a})_2\right) = b_1 + b_2.$ Watch Free Video Solution on Doubtnut
208	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $\left(\dfrac{3-z_1}{2-z_1}\right)\left(\dfrac{2-z_2}{3-z_2}\right) = k(k > 0)$, then prove that points $A(z_1), B(z_2), C(3), andD(2)$ (tak clockwise sense) are concyclic. Watch Free Video Solution on Doubtnut
209	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If z_1, z_2, z_3 are complex numbers such that $(2/z_1) = (1/z_2) + (1/z_3)$, then show that the p represented by $z_1, z_2(), z_3$ lie one a circle passing through e origin. Watch Free Video Solution on Doubtnut
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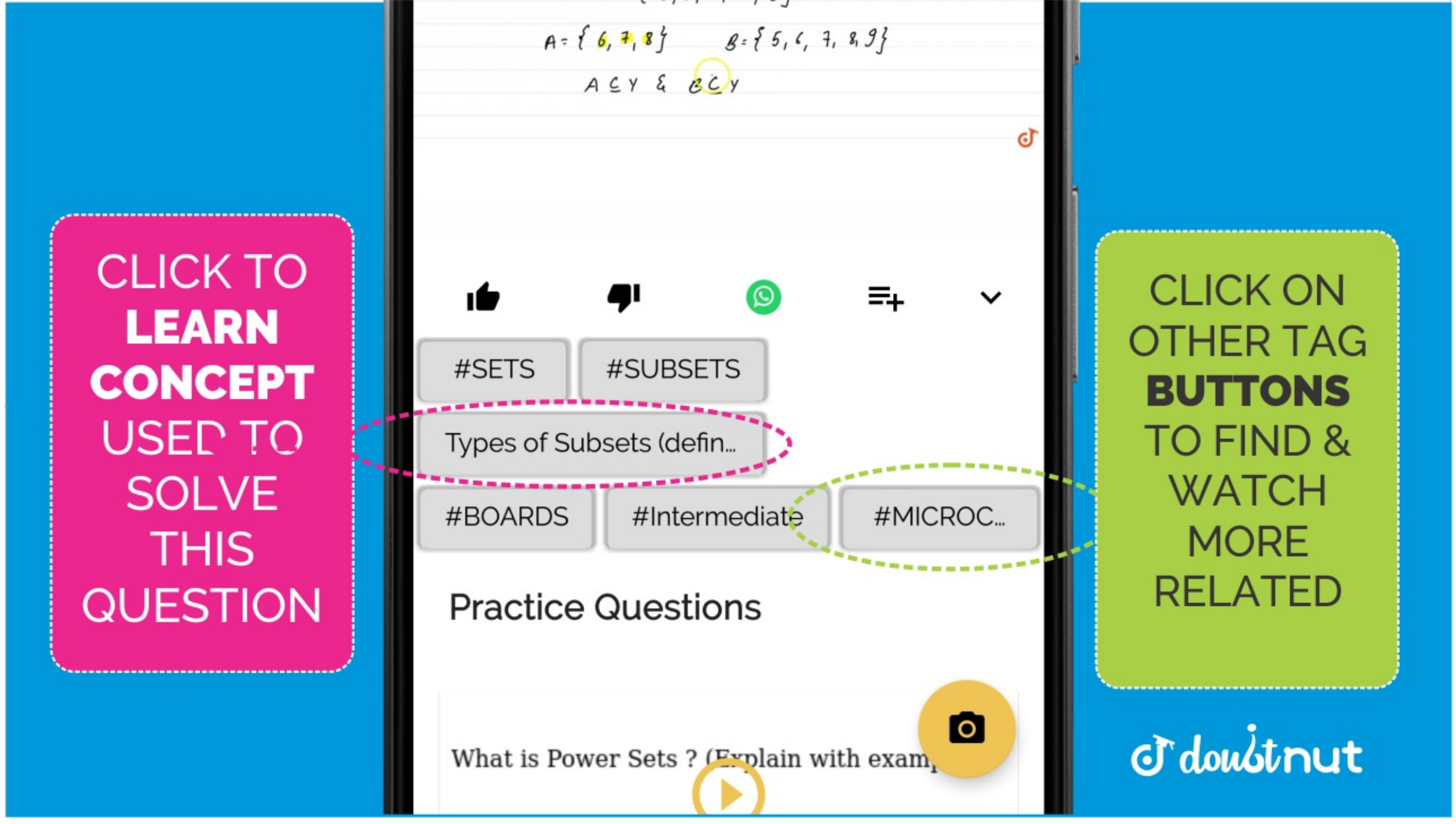

210	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** $A(z_1), B(z_2), C(z_3)$ are the vertices of he triangle ABC (in anticlockwise). If $\angle ABC = \pi/4$ $AB = \sqrt{2}(BC)$, then prove that $z_2 = z_3 + i(z_1 - z_3)$. Watch Free Video Solution on Doubtnut
211	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If one vertex of a square whose diagonals intersect at the origin is $3(\cos\theta + i\sin\theta)$, then fin two adjacent vertices. Watch Free Video Solution on Doubtnut
212	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Find the center of the are represented by $arg[(z - 3i)/(z - 2i + 4)] = \pi/4$. Watch Free Video Solution on Doubtnut
213	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** $z_1 and z_2$ are the roots of $3z^2 + 3z + b = 0$. if $O(0), (z_1), (z_2)$ form an equilateral triangle, the the value of b. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers Let $z_1, z_2 and z_3$ represent the vertices $A, B, and C$ of the triangle ABC, respectively, in the Ar

214 plane, such that $\left|z_1\right| = \left|z_2\right| = \left|z_3\right| = 5$. Prove that $z_1 \sin 2A + z_2 \sin 2B + z_3 \sin 2C = 0$.

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215 **CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers**

On the Argand plane $z_1, z_2 and z_3$ are respectively, the vertices of an isosceles triangle ABC $AC = BC$ and equal angles are θ. If z_4 is the incenter of the triangle, then prove $\left(z_2 - z_1\right)\left(z_3 - z_1\right) = (1 + \sec\theta)\left(z_4 - z_1\right)^2$.

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216 **CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane**

Find the locus of the points representing the complex number z for which$|z + 5|^2 - |z - 5|^2 =$

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217 **CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane**

Identify the locus of z if $\bar{z} = \bar{a} + \frac{r^2}{z - a}$.

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218 **CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane**

Let z be a complex number having the argument `theta,0

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219	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If z is any complex number such that $\|3z - 2\| + \|3z + 2\| = 4$, then identify the locus of z. Watch Free Video Solution on Doubtnut
220	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** $\|z - 2 - 3i\|^2 + \|z - 4 - 3i\|^2 = \lambda$ represents the equation of the circle with least radius. find the of λ Watch Free Video Solution on Doubtnut
221	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Fid the number of complex numbers which satisfies both the equa $\|z - 1 - i\| = \sqrt{2} and \|z + 1 + i\| = 2.$ Watch Free Video Solution on Doubtnut
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222	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If the imaginary part of $(2z + 1)/(iz + 1)$ is -2, then find the locus of the point representing i

	complex plane. Watch Free Video Solution on Doubtnut
223	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $\lvert(z-2)/(z-3)\rvert=2$ represents a circle, then find its radius. Watch Free Video Solution on Doubtnut
224	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $z_1+z_2+z_3+z_4=0$ where $b_1\in R$ such that the sum of no two values being zero $b_1z_1+b_2z_2+b_3z_3+b_4z_4=0$ where z_1,z_2,z_3,z_4 are arbitrary complex numbers such th three of them are collinear, prove that the four complex numbers would be concyc $\lvert b_1b_2\rvert\lvert z_1-z_2\rvert^2=\lvert b_3b_4\rvert\lvert z_3-z_4\rvert^2.$ Watch Free Video Solution on Doubtnut
225	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $\lvert z\rvert=2and\frac{z_1-z_3}{z_2-z_3}=\frac{z-2}{z+2}$, then prove that z_1,z_2,z_3 are vertices of a right angled triangle. Watch Free Video Solution on Doubtnut
226	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** In the Argands plane what is the locus of $z(\neq 1)$ such that $arg\left\{\frac{3}{2}\left(\frac{2z^2-5z+3}{2z^2-z-2}\right)\right\}=\frac{2\pi}{3}.$ Watch Free Video Solution on Doubtnut
227	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Consider an ellipse having its foci at $A\left(z_1\right)andB\left(z_2\right)$ in the Argand plane. If the eccentric the ellipse be e an it is known that origin is an interior point of the ellipse, then prove $e\in\left(0,\frac{\lvert z_1-z_2\rvert}{\lvert z_1\rvert+\lvert z_2\rvert}\right)$ Watch Free Video Solution on Doubtnut

228	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Find the locus of point z if $z, i, andiz,$ are collinear. Watch Free Video Solution on Doubtnut
229	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If the equation $\|z - a\| + \|z - b\| = 3$ represents an ellipse and $a, b \in C, wherea$ is fixed, then fin locus of $b.$ Watch Free Video Solution on Doubtnut
230	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If z is a nonreal root of $\sqrt[7]{-1}$, then find the value of $z^{86} + z^{175} + z^{289}.$ Watch Free Video Solution on Doubtnut
231	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** if$a = \cos(2\pi/7) + i\sin(2\pi/7)$, then find the quadratic equation whose roots $\alpha = a + a^2 + a^4 and \beta = a^3 + a^5 + a^7$. Watch Free Video Solution on Doubtnut
232	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If ω is an imaginary fifth root of unity, then find the value of $\log_2\left\|1 + \omega + \omega^2 + \omega^3 - 1/\omega\right\|.$ Watch Free Video Solution on Doubtnut

233	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $\alpha = e^{i2\pi/7} and f(x) = a_0 + \sum_{k-0}^{20} a_k x^k$, then prove that the value of $f(x) + f(\alpha, x) + \ + f\left(\alpha^{6}\right.$ independent of $\alpha \cdot$ Watch Free Video Solution on Doubtnut
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234	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** $If n \geq 3$ and $1, \alpha_1, \alpha_2, \alpha_3 .... \alpha_{n-1}$ are the n, nth roots of unity then find the valu $\sum\sum_{1 \leq i < j \leq (n-1)} \alpha_i \alpha_j$ Watch Free Video Solution on Doubtnut
235	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If the roots of $(z-1)^n = i(z+1)^n$ are plotted in an Argand plane, then prove that the collinear. Watch Free Video Solution on Doubtnut
236	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Is the following computation correct? If not give the correct computatio $\sqrt{(-2)}\sqrt{(-3)} = \sqrt{(-2)(-3)} = \sqrt{(-6)}$ Watch Free Video Solution on Doubtnut
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237	**EQUATIONS_Equations Reducible To Quadratic** Solve the following: $\left(\sqrt{x^2-5x+6}+\sqrt{x^2-5x+4}\right)^{\frac{x}{2}}+\left(\sqrt{x^2-5x+6}-\sqrt{x^2-5x+4}\right)^{x/2}=2^{\frac{x+4}{4}}$ Watch Free Video Solution on Doubtnut
238	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Show that the equation $A^2/(x-a)+B^2/(x-b)+C^2/(x-c)+\ldots+H^2/(x-h)=k$ has no imag root, where $A, B, C, \ldots, Handa, b, c, \ldots\ldots, handk \in R\cdot$ Watch Free Video Solution on Doubtnut
239	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Given that a, b, c are distinct real numbers such that express $ax^2+bx+c, bx^2+cx+aandcx^2+ax+b$ are always non-negative. Prove that the qua $\left(a^2+b^2+c^2\right)/(ab+bc+ca)$ can never lie inn $(-\infty, 1) \cup [4, \infty)$. Watch Free Video Solution on Doubtnut

240	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Find the number of quadratic equations, which are unchanged by squaring their roots. Watch Free Video Solution on Doubtnut
241	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha and \beta$ are the roots of $ax^2+bx+c=0andS_n=\alpha^n+\beta^n$, then $aS_{n+1}+bS_n+cS_{n-1}=0$ hence find $S_5\cdot$

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242	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α is a root of the equation $4x^2 + 2x - 1 = 0,$ then prove that $4\alpha^3 - 3\alpha$ is the other root. Watch Free Video Solution on Doubtnut
243	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Identity Equation And Inequalities** If the roots of the equation $x^2 - ax + b = 0$y are real and differ b a quantity which is less $c(c > 0),$ then show that b lies between $\dfrac{a^2 - c^2}{4}$ and $\dfrac{a^2}{4}$. Watch Free Video Solution on Doubtnut
244	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Identity Equation And Inequalities** The equation $ax^2 + bx + c = 0$ has real and positive roots. Prove that the roots of the equa $a^2x^2 + a(3b - 2c)x + (2b - c)(b - c) + ac = 0$ re real and positive. Watch Free Video Solution on Doubtnut
245	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $x^2 + px - 44p = 0$ has integral roots where p is prime number, then find the value $(s) of p$. Watch Free Video Solution on Doubtnut
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246	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $aandc$ are odd prime numbers and $ax^2 + bx + c = 0$ has rational roots , where $b \in I,$ prove one root of the equation will be independent of $a, b,$ $\cdot$ Watch Free Video Solution on Doubtnut
247	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** If $2x^2 - 3xy - 2y^2 = 7,$ then prove that there will be only two integral pairs (x, y) satisfyin above relation. Watch Free Video Solution on Doubtnut
248	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let $a, b \in nana > 1.$ Also p is a prime number. If $ax^2 + bx + c = p$ for any intergral values then prove that $a + bx + c \neq 2p$ for any integral value of $x \cdot$ Watch Free Video Solution on Doubtnut
249	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Show that the minimum value of $(x + a)(x + b)/(x + c)wherea > c, b > c,$ is $\left(\sqrt{a - c} + \sqrt{b - c}\right.$ real values of $x >$ $\cdot$ Watch Free Video Solution on Doubtnut
250	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If $x \in R,$ then prove that maximum value of $2(a - x)\left(x + \sqrt{x^2 + b^2}\right)$ is $a^2 + b^2$. Watch Free Video Solution on Doubtnut
251	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $f(x) = x^3 + bx^2 + cx + d$ and$f(0), f(-1)$ are odd integers, prove that $f(x) = 0$ cannot hav integral roots.

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252	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Find the values of k for which $\left\|\dfrac{x^2+kx+1}{x^2+x+1}\right\| < 2, \forall x \in R$ ▶ Watch Free Video Solution on Doubtnut
253	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Solve the equation $\sqrt{a\left(2^x-2\right)+1} = 1-2^x, x \in R \cdot$ ▶ Watch Free Video Solution on Doubtnut
254	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** For $a<0,$ deterine all real roots of the equation $x^2-2a\|x-a\|-3a^2=0.$ ▶ Watch Free Video Solution on Doubtnut
255	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Find the values of a for which all the roots of the euation $x^4-4x^3-8x^2+a=0$ are real. ▶ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

256	If $x = 2 + 2^{2/3} + 2^{1/3}$, then the value of $x^3 - 6x^2 + 6x$ is (a)3 b. 2 c. 1 d. -2 Watch Free Video Solution on Doubtnut
257	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** The least value of the expression $x^2 + 4y^2 + 3z^2 - 2x - 12y - 6z + 14$ is a.1 b. no least value c none of these Watch Free Video Solution on Doubtnut
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258	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Key Points In Solving An Equation** If $x = 2 + 2^{2/3} + 2^{1/3}$, then the value of $x^3 - 6^2 + 6x$ is 3 b. 2 c. 1 d. -2 Watch Free Video Solution on Doubtnut
259	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** If $x, y \in R$ satify the equation $x^2 + y^2 - 4x - 2y + 5 = 0,$ then the value of the expres $\left[\left(\sqrt{x} - \sqrt{y}\right)^2 + \sqrt{xy}\right] / \left(x + 4\sqrt{xy}\right)$ is $\sqrt{2} + 1$ b. $\dfrac{\sqrt{2} + 1}{2}$ c. $\dfrac{\sqrt{2} - 1}{2}$ d. $\dfrac{\sqrt{2} + 1}{\sqrt{2}}$ Watch Free Video Solution on Doubtnut
260	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** If $x = 1 + \cfrac{1}{3 + \cfrac{1}{2 + \cfrac{1}{3 + \cfrac{1}{2\infty}}}}$ a $\sqrt{\dfrac{5}{2}}$ b. $\sqrt{\dfrac{3}{2}}$ c. $\sqrt{\dfrac{7}{3}}$ d. $\sqrt{\dfrac{5}{3}}$

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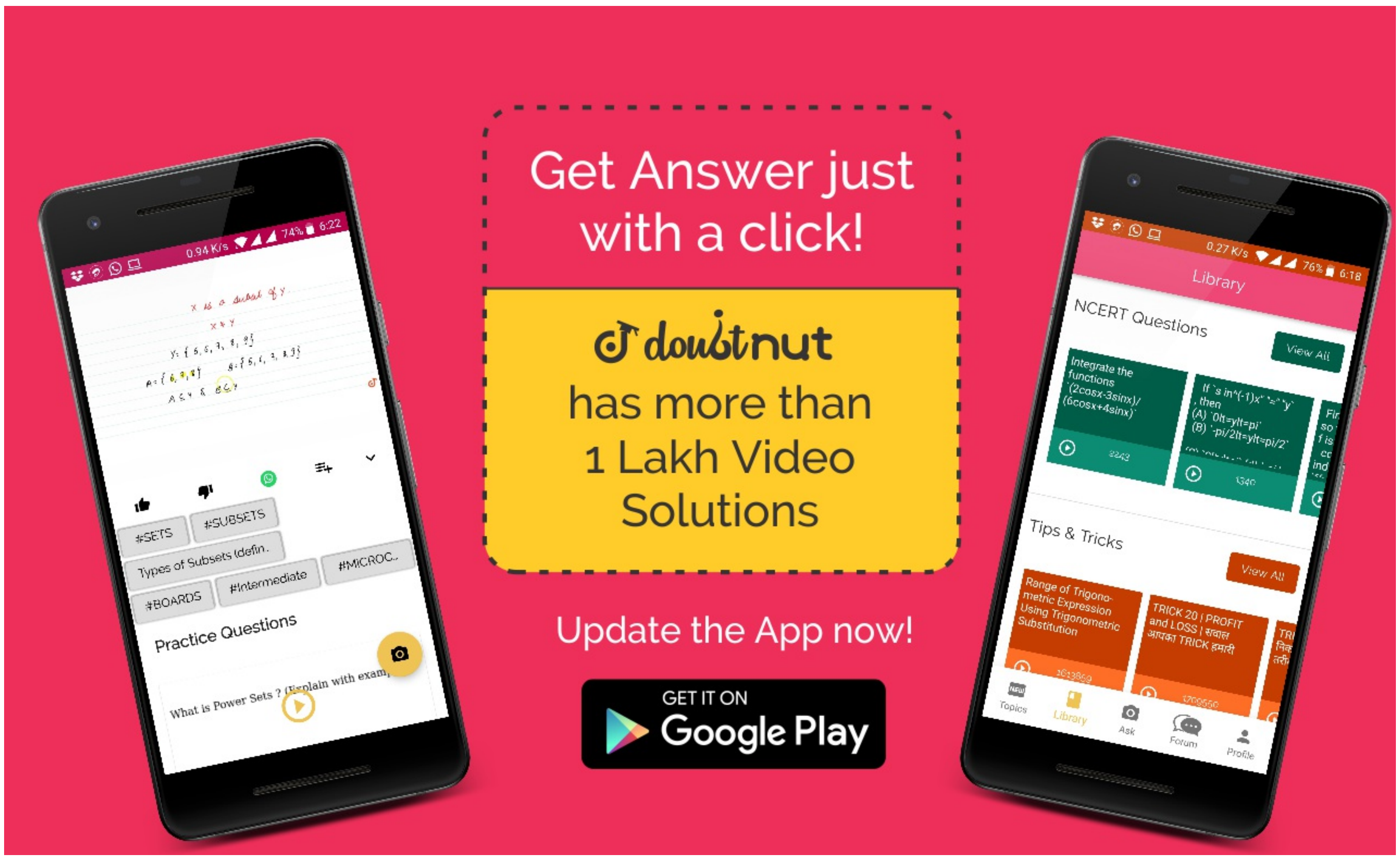
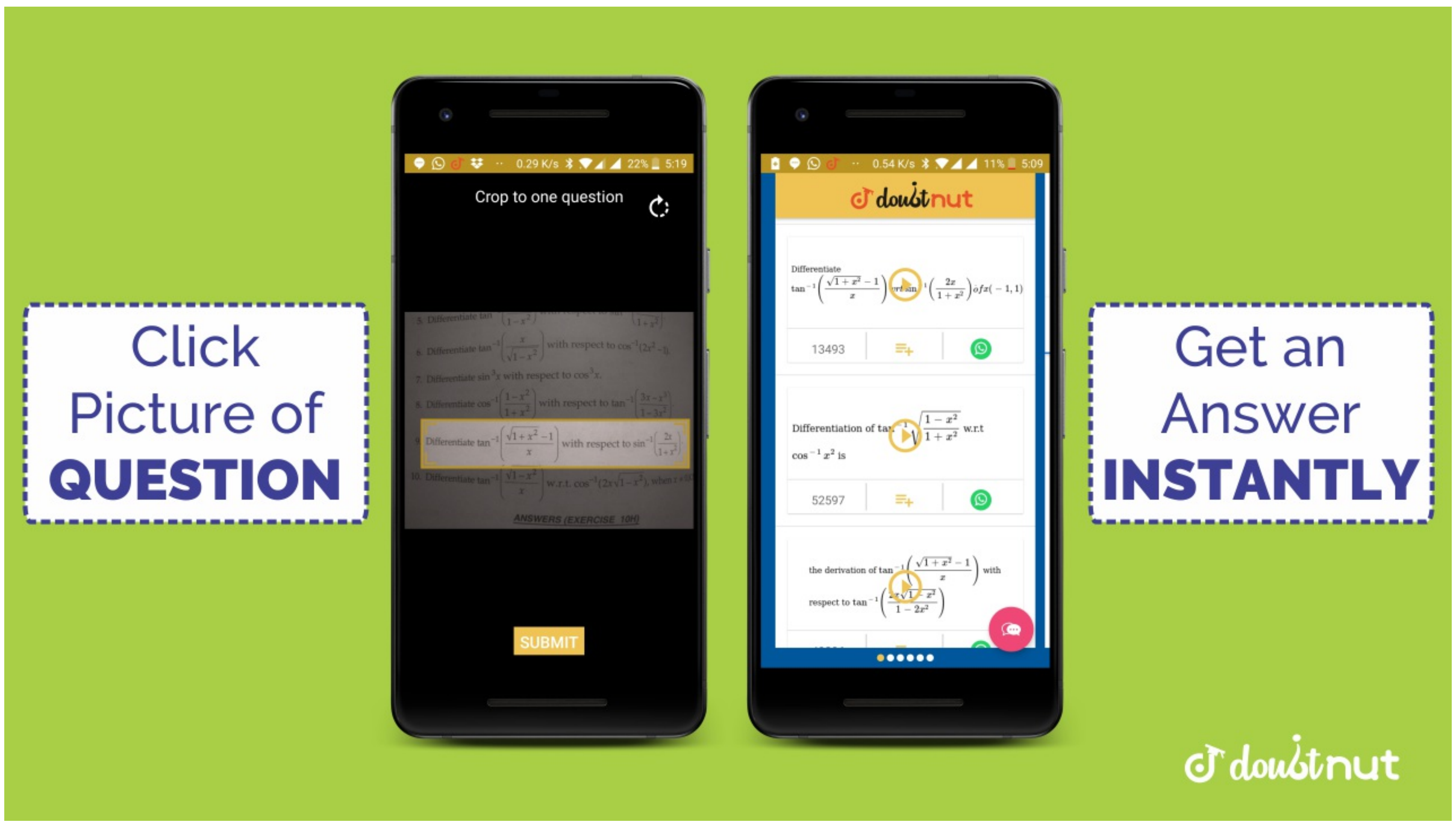
261	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If $x = 1 + i$ is a root of the equation $= x^3 - ix + 1 - i = 0,$ then the other real root is 0 b. 1 c. none of these Watch Free Video Solution on Doubtnut
262	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The number of roots of the equation $\sqrt{x - 2}\left(x^2 - 4x + 3\right) = 0$ is a. three b. four c. one d. two Watch Free Video Solution on Doubtnut
263	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** The curve $y = (\lambda + 1)x^2 + 2$ intersects the curve $y = \lambda x + 3$ in exactly one point, if λ ec $\{ - 2, 2\}$ b. $\{1\}$ c. $\{ - 2\}$ d. $\{2\}$ Watch Free Video Solution on Doubtnut
264	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If the expression $x^2 + 2(a + b + c) + 3(bc + c + ab)$ is a perfect square, then $a = b =$ $a = \pm b = \pm c$ c. $a = b \neq c$ d. $noneofthese$ Watch Free Video Solution on Doubtnut

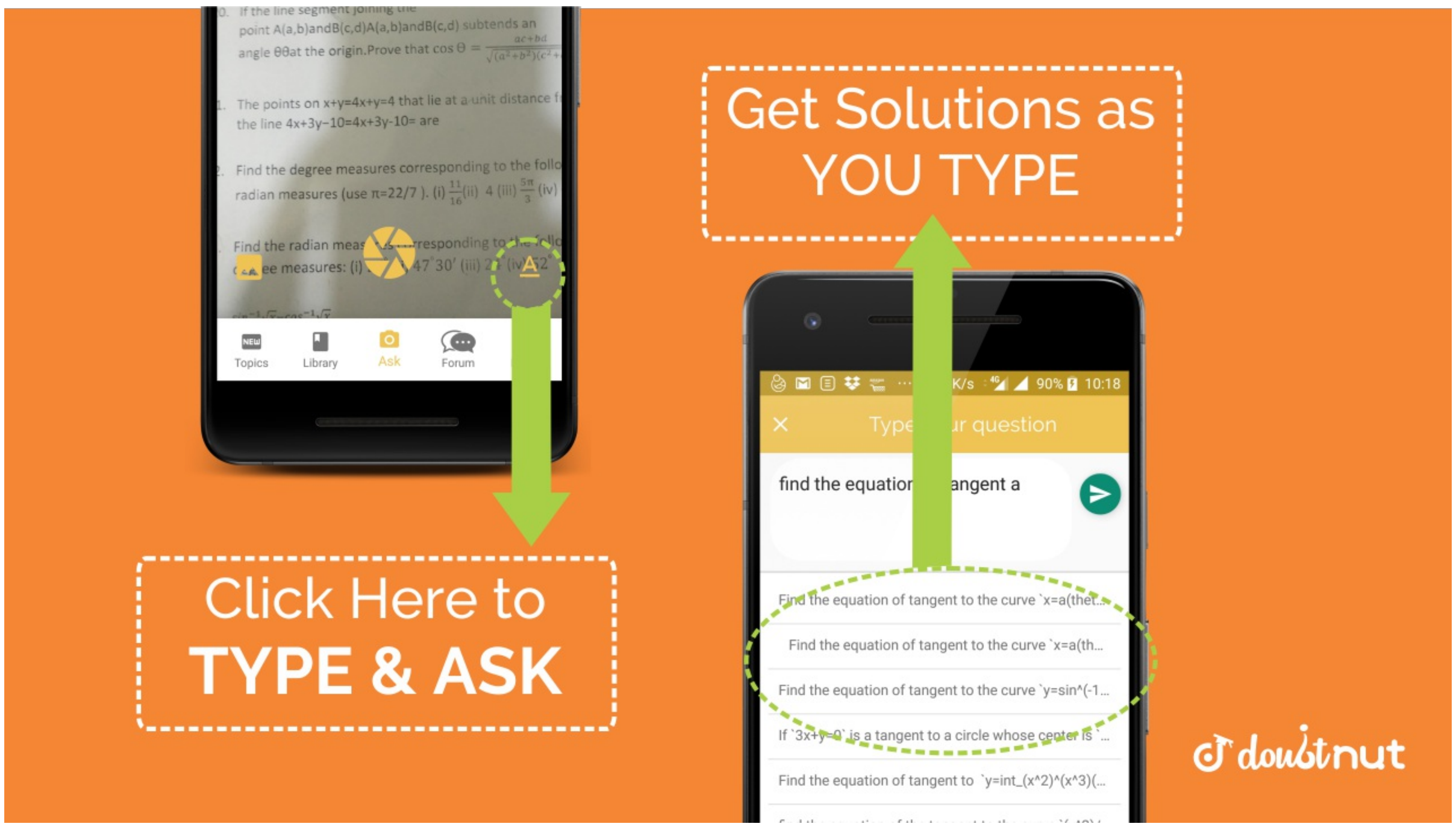
265	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of $x^2 - px + q = 0 and \alpha', \beta'$ are the roots of $x^2 - p'x + q' = 0,$ then the val $\left(\alpha - \alpha'\right)^2 + \left(\beta - \alpha'\right)^2 + \left(\alpha - \beta'\right)^2 + \left(\beta - \beta'\right)^2$ is $2\left\{p^2 - 2q + p'^2 - 2q' -$ $2\left\{p^2 - 2q + p'^2 - 2q' - qq'\right\}$ $2\left\{p^2 - 2q - p'^2 - 2q' - pp'\right\}$ $2\left\{p^2 - 2q - p'^2 - 2q' - qq'\right\}$ Watch Free Video Solution on Doubtnut
266	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If $x^2 + px = 1$ is a factor of the expression $ax^3 + bx = c,$ then $a^2 - c^2 = ab$ b. $a^2 + c^2 = -$ $a^2 - c^2 = -ab$ d. none of these Watch Free Video Solution on Doubtnut
267	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The sum of the non-real root of $\left(x^2 + x - 2\right)\left(x^2 + x - 3\right) = 12$ is -1 b. 1 c. -6 d. 6 Watch Free Video Solution on Doubtnut
268	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $(ax^2 + c)y + \left(ax^2 + c\right) = 0 and x$ is a rational function of $y and ac$ is negative, then $ac' + c'c =$ $a/a' = c/c'$ c. $a^2 + c^2 = a'^2 + c'^2$ d. $aa' + \ ^\wedge(') = 1$ Watch Free Video Solution on Doubtnut
269	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If the equation $x^2 - 3px + 2q = 0 and x^2 - 3ax + 2b = 0$ have a common roots and the other ro the second equation is the reciprocal of the other roots of the first, then $(2 - 2b)^2$. a.$36pa(q$ b. $18pa(q - b)^2$ c. $36bq(p - a)^2$ d. $18bq(p - a)^2$ Watch Free Video Solution on Doubtnut

	
270	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The number of irrational roots of the equation $\frac{4x}{x^2+x+3}+\frac{5x}{x^2-5x+3}=-\frac{3}{2}$ is (a)4 b. 0 c. 1 Watch Free Video Solution on Doubtnut
271	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let a, b and c be real numbers such that $4a+2b+c=0$ and $ab<0$.Then the equa $ax^2+bx+c=0$. Watch Free Video Solution on Doubtnut
272	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are roots of the equation $x^2-2x+3=0$. Then the equation whose roots $P=\alpha^3-3\alpha^2+5\alpha-2a\ln dQ=\beta^3-\beta^2+\beta+5$ is $x^2+3x+2=0$ b. $x^2-3x-2=0$ c. $x^2-3x+2=$ none of these Watch Free Video Solution on Doubtnut
273	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** A quadratic equation with integral coefficients has two different prime numbers as its roo the sum of the coefficients of the equation is prime, then the sum of the roots is 2 b. 5 c. 7 Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

274	**EQUATIONS_Quadratic Equation** If a, b, c are three distinct positive real numbers, the number of real and distinct roo $ax^2 + 2b\|x\| - c = 0$ is 0 b. 4 c. 2 d. none of these Watch Free Video Solution on Doubtnut
275	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are real and distinct roots of $ax^2 + bx - c = 0 and p, q$ are real and distinct roo $ax^2 + bx - \|c\| = 0, where (a > 0),$ then $\alpha, \beta \in (p, q)$ b. $\alpha, \beta \in [p, q]$ c. $p, q \in (\alpha, \beta)$ d. none of the Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
276	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems** Let $a \neq 0 and p(x)$ be a polynomial of degree greater than 2. If $p(x)$ leaves reminders $a and a$ divided respectively, by $x + a and x - a,$ the remainder when $p(x)$ is divided by $x^2 - a^2$ is $2x$ c. x d. x Watch Free Video Solution on Doubtnut
277	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The quadratic $x^2 + ax + b + 1 = 0$ has roots which are positive integers, then $\left(a^2 + b^2\right)$ ca equal to a.50 b. 37 c. 61 d. 19 Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic

278	The sum of values of x satisfying the equa $\left(31+8\sqrt{15}\right)^{x}$ ^ $(2-3)+1=\left(32+8\sqrt{15}\right)^{x}$ ^ $(2-3)$ is 3 b. 0 c. 2 d. none of these Watch Free Video Solution on Doubtnut
279	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of the equation $ax^2+bx+c=0,$ then the value $a\alpha^2+c/a\alpha+b+\left(a\beta^2+c\right)/(a\beta+b)$ is $\frac{b\left(b^2-2ac\right)}{4a}$ b. $\frac{b^2-4ac}{2a}$ c. $\frac{b\left(b^2-2ac\right)}{a^2c}$ d. none of these Watch Free Video Solution on Doubtnut
280	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $a\in(-1,1),$ then roots of the quadratic equation $(a-1)x^2+ax+\sqrt{1-a^2}=0$ are a. re imaginary c. both equal d. none of these Watch Free Video Solution on Doubtnut
281	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $a, b, c, d\in R,$ then the equation $\left(x^2+ax-3b\right)\left(x^2-cx+b\right)\left(x^2-dx+2b\right)=0$ has a. 6 real b. at least 2 real roots c. 4 real roots d. none of these Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

282	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha and \beta$ are roots of the equation $ax^2 + bx + c = 0,$ then the roots of the equa $a(2x + 1)^2 - b(2x + 1)(x - 3) + c(x - 3)^2 = 0$ are $\frac{2\alpha + 1}{\alpha - 3}, \frac{2\beta + 1}{\beta - 3}$ b. $\frac{3\alpha + 1}{\alpha - 2}, \frac{3\beta + 1}{\beta - 2}$ c. $\frac{2\alpha - 1}{\alpha - 2}, \frac{2\beta +}{\beta -}$ none of these Watch Free Video Solution on Doubtnut
283	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the root of the equation $(a - 1)\left(x^2 - x + 1\right)^2 = (a + 1)\left(x^4 + x^2 + 1\right)$ are real and distinct, the value of $a \in$ a.$(- \infty, 3]$ b. $(- \infty, - 2) \cup (2, \infty)$ c. $[- 2, 2]$ d. $[- 3, \infty)$ Watch Free Video Solution on Doubtnut
284	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Ilf $b_1, b_2 = 2\left(c_1 + c_2, \right)$ then at least one of the equation $x^2 + b_1x + c_1 = 0 and x^2 + b_2x + c$ has a. imaginary roots b. real roots c. purely imaginary roots d. none of these Watch Free Video Solution on Doubtnut
285	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The integral value of m for which the root of the equation $mx^2 + (2m - 1)x + (m - 2) = ($ rational are given by the expression [where n is integer] n^2 b. $n(n + 2)$ c. $n(n + 1)$ d. no these Watch Free Video Solution on Doubtnut
286	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Suppose A, B, C are defined $A = a^2b + ab^2 - a^2c - ac^2, B = b^2c + bc^2 - a^2b - ab^2, and C = a^2c + ac^2 - b^2c - bc^2, where a > b >$ and the equation $Ax^2 + Bx + C = 0$ has equal roots, then a, b, c are in AP. b. GP. c. HP. d. AC Watch Free Video Solution on Doubtnut
287	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α_1, α_2 are the roots of equation $x^2 - px + 1 = 0 and \beta_1, \beta_2$ are those of equation $x^2 = qx +$ and vector $\alpha_1\hat{i} + \beta_1\hat{j}$ is parallel to $\alpha_2\hat{i} + \beta_2\hat{j}$, then $p = \pm q$ b. $p = \pm 2q$ c. $p = 2q$ d. none of th Watch Free Video Solution on Doubtnut

doubtnut पढ़ना हुआ आसान	
288	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** If $a(p+q)^2 + 2bpq + c = 0abda(p+r)^2 + 2bpr + c = 0(a \neq 0)$, then $qr = p^2$ b. $qr = p^2 + \frac{c}{a}$ c. qr d. none of these Watch Free Video Solution on Doubtnut
289	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the roots of the equation $ax^2 - bx + c = 0are\alpha, \beta,$ then the roots of the equa $b^2cx^2 - ab^2x + a^3 = 0$ are $\frac{1}{\alpha^3 + \alpha\beta}, \frac{1}{\beta^3 + \alpha\beta}$ b. $\frac{1}{\alpha^2 + \alpha\beta}, \frac{1}{\beta^2 + \alpha\beta}$ c. $\frac{1}{\alpha^4 + \alpha\beta}, \frac{1}{\beta^4 + \alpha\beta}$ d. nor these Watch Free Video Solution on Doubtnut
290	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha and\beta, \alpha and\gamma, \alpha and\delta$ are the roots of the equa $ax^2 + 2bx + c = 0, 2bx^2 + cx + a = 0adncx^2 + ax + 2b = 0,$ respectively, where a, b, and c positive real numbers, then $\alpha + \alpha^2 =$ a.abc b. $a + 2b + c$ c. -1 d. 0 Watch Free Video Solution on Doubtnut
291	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** $x^2 - xy + y^2 - 4x - 4y + 16 = 0$ represents a. a point b. a circle c. a pair of straight line d. no these Watch Free Video Solution on Doubtnut

292	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If α, β are the nonzero roots of $ax^2 + bx + c = 0 and a\alpha^2, \beta^2$ are the roots $a^2x^2 + b^2x^2 + b^2x + c^2 = 0, then a, b, c$ are in a. G.P. b. H.P. c. A.P. d. none of these Watch Free Video Solution on Doubtnut
293	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the roots of the equation $ax^2 + bx + c = 0$ are of the $(k+1)/k and (k+2)/(k+1), then (a+b+c)^2$ is equal to $2b^2 - ac$ b. $a62$ c. $b^2 - 4ac$ d. $b^2 - 2ac$ Watch Free Video Solution on Doubtnut

294	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of $ax^2 + bx + c = 0 and \alpha + h, \beta + h$ are the roots of $px^2 + qx + r = 0 the$ $-\frac{1}{2}\left(\frac{a}{b} - \frac{p}{q}\right)$ b. $\left(\frac{b}{a} - \frac{q}{p}\right)$ c. $\frac{1}{2}\left(\frac{b}{q} - \frac{q}{p}\right)$ d. none of these Watch Free Video Solution on Doubtnut
295	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The equation $\left(x^2 + x + 1\right)^2 + 1 = \left(x^2 + x + 1\right)\left(x^2 - x - 5\right)$ for $x \in (-2, 3)$ will have numb solutions. 1 b. 2 c. 3 d. 0 Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

296	If α, β re the roots of $ax^2 + c = bx$, then the equation $(a + cy)^2 = b^2 y$ in y has the roo $\alpha\beta^{-1}, \alpha^{-1}\beta$ b. α^{-2}, β^{-2} c. α^{-1}, β^{-1} d. α^2, β^2 Watch Free Video Solution on Doubtnut
297	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the roots of the equation $x^2 + 2ax + b = 0$ are real and distinct and they differ by at mo ,then b lies in the interval a. $\left(a^2, a^2, +m^2\right)$ b. $\left(a^2 - m^2, a62\right)$ c. $\left[a^2 - m^2, a^2\right)$ d. none of these Watch Free Video Solution on Doubtnut
298	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If the ratio of the roots of $ax^2 + 2bx + c = 0$ is same as the ratios of roots of $px^2 + 2qx + r$ then a. $\frac{2b}{ac} = \frac{q^2}{pr}$ b. $\frac{b}{ac} = \frac{q^{\square}}{pr}$ c. $\frac{b^2}{ac} = \frac{q^2}{pr}$ d. none of these Watch Free Video Solution on Doubtnut
299	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If one root $x^2 - x - k = 0$ is square of the other, then $k =$ a. $2 \pm \sqrt{5}$ b. $2 \pm \sqrt{3}$ c. $3 \pm \sqrt{2}$ d. $5 \pm \sqrt{}$ Watch Free Video Solution on Doubtnut
	
300	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha, and \beta$ be t roots of the equation $x^2 + px - 1/2p^2 = 0, where p \in R$. Then the minimum valu

	$\alpha^4+\beta^4$ is $2\sqrt{2}$ b. $2-\sqrt{2}$ c. 2 d. $2+\sqrt{2}$ Watch Free Video Solution on Doubtnut
301	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of $x^2+px+q=0 and \gamma, \delta$ are the roots of $x^2+px+r=0,$ then $\frac{(\alpha-\gamma)(\alpha-}{(\beta-\gamma)(\beta-}$ a.1 b. q c. r d. $q+r$ Watch Free Video Solution on Doubtnut
302	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha and \beta$ are the rootsof he equations $x^2-ax+b=0 and A_n=\alpha^n+\beta^n$, then which of the follo is true? a.$A_{n+1}=aA_n+bA_{n-1}$ b. $A_{n+1}=bA_{n-1}+aA_n$ c. $A_{n+1}=aA_n-bA_{n-1}$ $A_{n+1}=bA_{n-1}-aA_n$ Watch Free Video Solution on Doubtnut
303	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** The value m for which one of the roots of $x^2-3x+2m=0$ is double of one of the roo $x^2-x+m=0$ is -2 b. 1 c. 2 d. none of these Watch Free Video Solution on Doubtnut
304	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If the equations $ax^2+bx+c=0 and x^3+3x^2+3x+2=0$ have two common roots, then $a=$ b. $a=b\neq c$ c. $a=-b=c$ d. none of these Watch Free Video Solution on Doubtnut
305	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** The number of values of a for which equations $x^3+ax+1=0 and x^4+ax^2+1=-$ ha common root is a. 0 b. 1 c. 2 d. Infinite Watch Free Video Solution on Doubtnut

306	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let $p(x) = 0$ be a polynomial equation of the least possible degree, with rational coeffic having $73 + 493$ as one of its roots. Then product of all the roots of $p(x) = 0$ is 56 b. 63 c. 7 c Watch Free Video Solution on Doubtnut
307	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha, \beta, \gamma, \sigma$ are the roots of the equation $x^4 + 4x^3 - 6x^2 + 7x - 9 = 0,$ then he valu $\left(1 + \alpha^2\right)\left(1 + \beta^2\right)\left(1 + \gamma^2\right)\left(1 + \sigma^2\right)$ is 9 b. 11 c. 13 d. 5 Watch Free Video Solution on Doubtnut
308	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** If $\left(m_r, 1/m_r\right), r = 1, 2, 3, 4,$ are four pairs of values of $xandy$ that satisfy the equa $x^2 + y^2 + 2gx + 2fy + c = 0$, then the value of m_1, m_2, m_3, m_4 is 0 b. 1 c. -1 d. none of these Watch Free Video Solution on Doubtnut
309	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If roots of an equation $x^n - 1 = 0are1, a_1, a_2, \ldots. a_{n-1},$ then the value $\left(1 - a_1\right)\left(1 - a_2\right)\left(1 - a_3\right)\left(1 - a_{n-1}\right)$ will be n b. n^2 c. n^n d. 0 Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

310	If $\tan\theta_1, \tan\theta_2, \tan\theta_3$ are the real roots of $x^3 - (a+1)x^2 + (b-a)x - b = 0, where\theta_1 + \theta_2 + \theta_3 \in (0, \pi)$, then $\theta_1 + \theta_2 + \theta_3$, is equal to π/ $\pi/4$ c. $3\pi/4$ d. π Watch Free Video Solution on Doubtnut
311	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If α, β, γ are the roots of $x^3 - x^2 - 1 = 0$ then the value $(1+\alpha)/(1-\alpha) + (1+\beta)/(1-\beta) + (1+\gamma)/(1-\gamma)$ is equal to -5 b. -6 c. -7 d. -2 Watch Free Video Solution on Doubtnut
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312	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If $\alpha, \beta, \gamma, \delta$ are the roots of the equation $x^4 - Kx^3 + Kx^2 + Lx + m = 0, whereK, L, andM$ are numbers, then the minimum value of $\alpha^2 + \beta^2 + \gamma^2 + \delta^2$ is 0 b. -1 c. 1 d. 2 Watch Free Video Solution on Doubtnut
313	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If x is real, then $x/\left(x^2 - 5x + 9\right)$ lies between $-1and - 1/11$ b. $1and - 1/11$ c. $1and1/11$ d. no these

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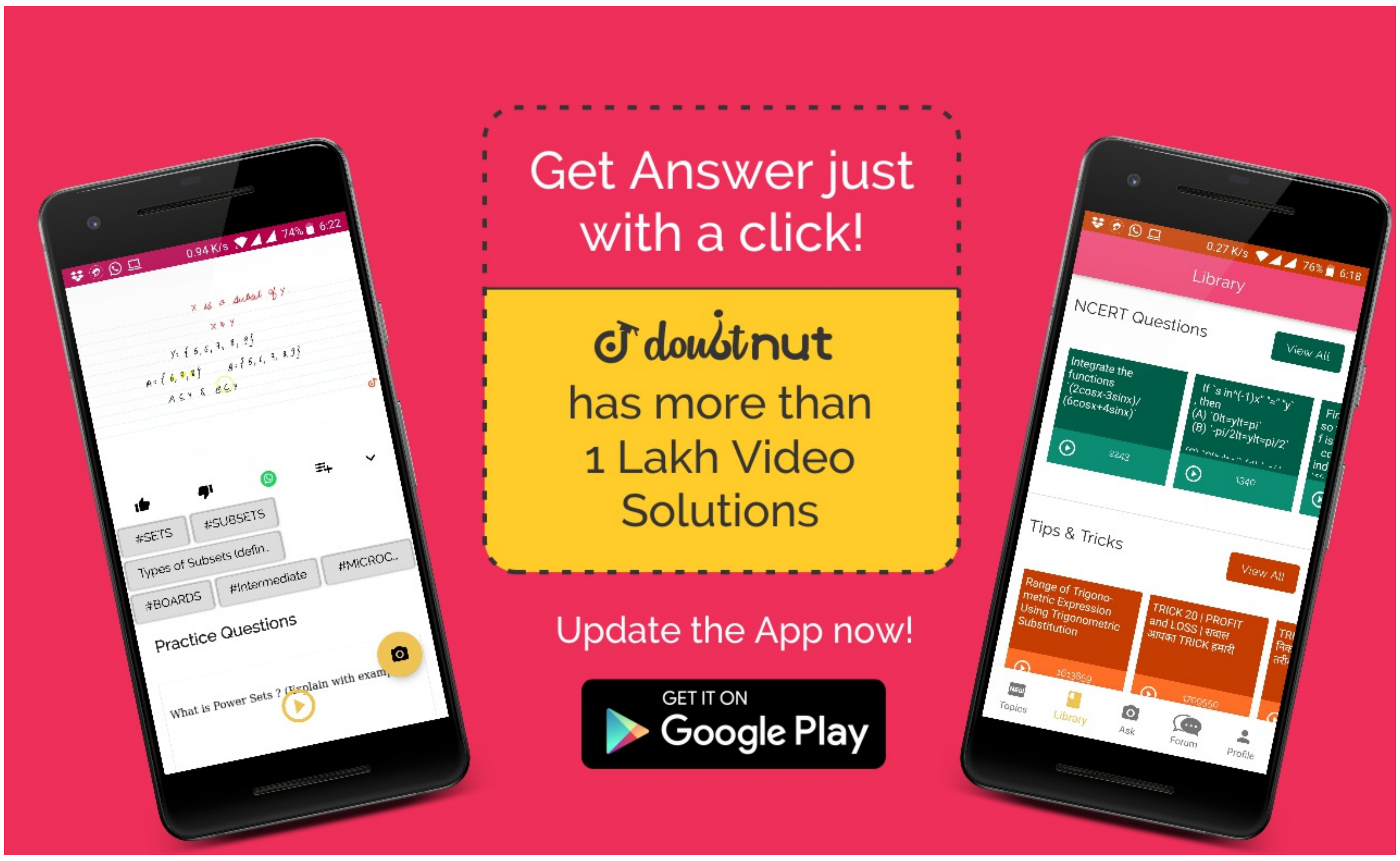
314	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Set of all real value of a such that $f(x) = \frac{(2a - 1) + x^2 + 2(a + 1)x + (2a - 1)}{x^2 - 2x + 40}$ is always negati $-\infty, 0$ b. $0, \infty$ c. $-\infty, 1/2$ d. none Watch Free Video Solution on Doubtnut
315	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $a, b \in R, a \neq 0$ and the quadratic equation $ax^2 - bx + 1 = 0$ has imaginary roots, then $(a +$ is a. positive b. negative c. zero d. Dependent on the sign of b Watch Free Video Solution on Doubtnut
316	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If he expression $[mx - 1 + (1/x)]$ is non-negative for all positive real $x,$ then the minimum of m must be $-1/2$ b. 0 c. $1/4$ d. $1/2$ Watch Free Video Solution on Doubtnut
317	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Suppose that $f(x)$ isa quadratic expresson positive for all real $x\cdot$ If $g(x) = f(x) + f'(x) + f^x,$ the any real $x\left(wheref'(x)andf^x\right.$ represent 1st and 2nd derivative, respectively). $g(x) < 0$ b. $g(x) >$ $g(x) = 0$ d. $g(x) \geq 0$ Watch Free Video Solution on Doubtnut

318	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let $f(x) = ax^2 - bx + c^2 \neq 0 and f(x) \neq 0$ for all $x \in R\cdot$ Then `a+c^22b$c.$ 9a-3b+c^2<0` d. nor these Watch Free Video Solution on Doubtnut
319	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** $x_1 and x_2$ are the roots of $ax^2 + bx + c = 0 and x_1 x_2 < 0.$ Roots of $x_1\left(x - x_2\right)^2 + x_2\left(x - x_1\right)^2() =$ a. real and of opposite sign b. negative c. positive d. none real Watch Free Video Solution on Doubtnut
320	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If a, b, c, d are four consecutive terms of an increasing A.P., then the roots of the equa $(x - a)(x - c) + 2(x - b)(x - d) = 0$ are a. non-real complex b. real and equal c. integers d. rea distinct Watch Free Video Solution on Doubtnut
321	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If roots of $x^2 - (a - 3)x + a = 0$ are such that at least one of them is greater than 2, then $a \in$ b. $a \in [7, \infty]$ c. $a \in [9, \infty]$ d. $a \in [7, 9]$ Watch Free Video Solution on Doubtnut
322	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let $f(x) = ax^2 + bx + a, b, c \in R\cdot$ If $f(x)$ takes real values for real values of x and non-real v for non-real values of x , then $a = 0$ b. $b = 0$ c. $c = 0$ d. nothing can be said about $a, b, \cdot$ Watch Free Video Solution on Doubtnut
323	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** All the values of m for whilch both the roots of the equation $x^2 - 2mx + m^2 - 1 = 0$ are gr than -2 but less than 4 lie in the interval `-23$c.$ -1 Watch Free Video Solution on Doubtnut

324	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the roots of the quadratic equation $\left(4p - p^2 - 5\right)x^2 - (2p - 1)x + 3p = 0$ lie on either side of then the number of interval values of p is 1 b. 2 c. 3 d. 4 Watch Free Video Solution on Doubtnut
325	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** The interval of a for which the equation $tan^2x - (a - 4)\tan x + 4 - 2a = 0$ has at least one solu $\forall x \in [0, \pi/4]$ $a \in (2, 3)$ b. $a \in [2, 3]$ c. $a \in (1, 4)$ d. $a \in [1, 4]$ Watch Free Video Solution on Doubtnut
326	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** The range of a for which the equation $x^2 + ax - 4 = 0$ has its smaller root in the interval $(- 1$ $(- \infty, - 3)$ b. $(0, 3)$ c. $(0, \infty)$ d. $(- \infty, - 3) \cup (0, \infty)$ Watch Free Video Solution on Doubtnut
327	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If both roots of the equation $ax^2 + x + c - a = 0$ are imaginary and $c > 1,$ then $3a > 2 + 4$ $3a < 2 + 4c$ c. `c Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

328	The set of all possible real values of a such that the inequality $(x - (a - 1))\left(x - \left(a^2 - 1\right)\right) < 0$ for all $x \in (- 1, 3)$ is $(0, 1)$ b. $(\infty, - 1]$ c. $(- \infty, - 1)$ d. $(1, \infty)$ Watch Free Video Solution on Doubtnut
329	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Consider the equation $x^2 + 2x - n = 0 where n \in N and n \in [5, 100]\cdot$ The total number of diff values of n so that the given equation has integral roots is 8 b. 3 c. 6 d. 4 Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
330	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The total number of values a so that $x^2 - x - a = 0$ has integral roots, where $a \in N and 6 \le a$, is equal to a.2 b. 4 c. 6 d. 8 Watch Free Video Solution on Doubtnut
331	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The total number of integral values of a so that $x^2 - (a + 1)x + a - 1 = 0$ ha integral roots is to 1 b. 2 c. 4 d. none of these Watch Free Video Solution on Doubtnut
332	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The number of value of k for which $\left[x^2 - (k - 2)x + k^2\right] \times \left[x^2 + kx + (2k - 1)\right]$ is a perfect squa a.2 b. 1 c. 0 d. none of these

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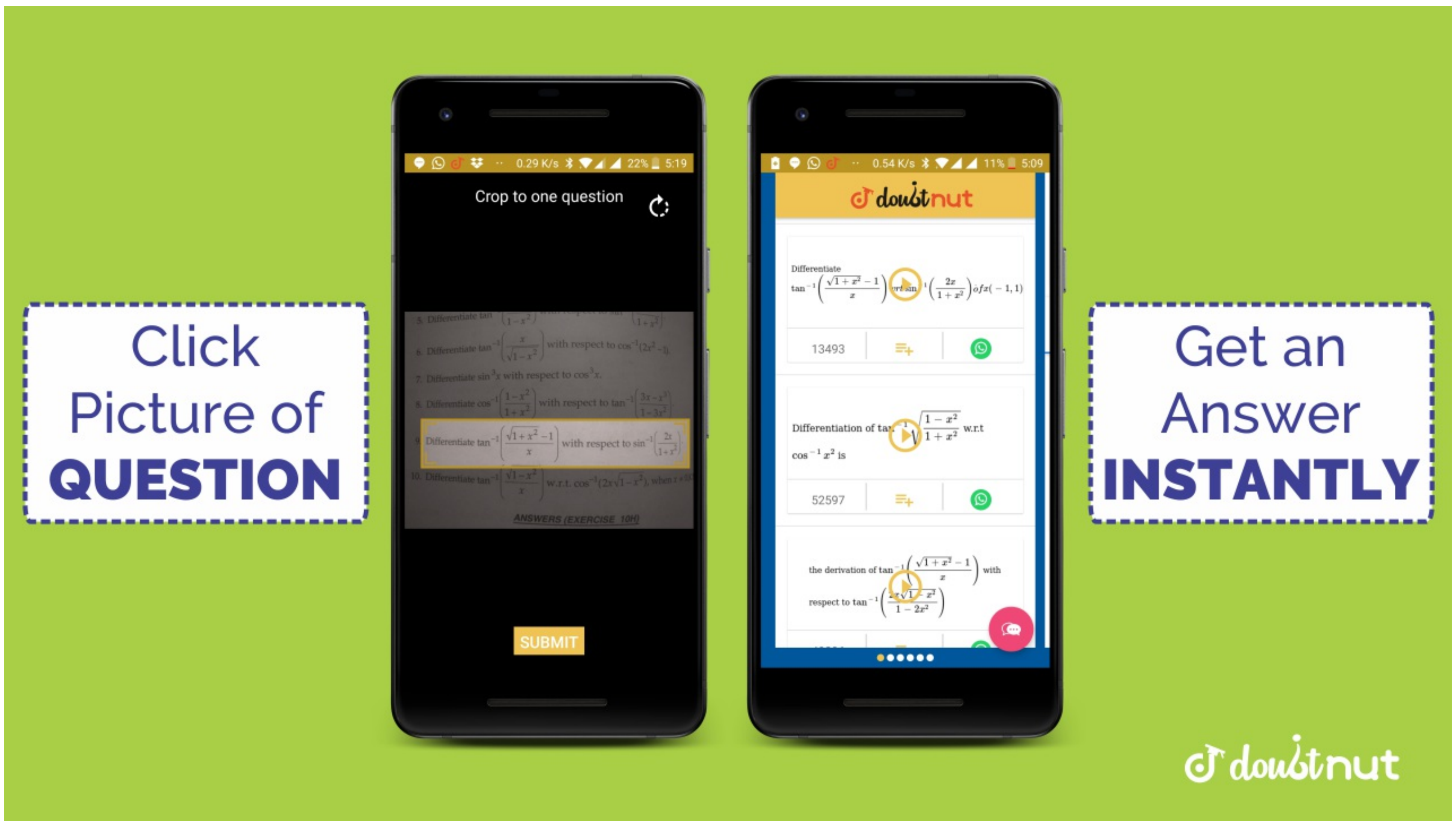
333	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of $x^2 + px + q = 0adnx^{2n} + p^n x^n + q^n = 0andilf(\alpha / \beta), (\beta / \alpha)$ are the roo $x^n + 1 + (x + 1)^n = 0, the \cap (\in N)$ a. must be an odd integer b. may be any integer c. must b even integer d. cannot say anything Watch Free Video Solution on Doubtnut
334	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The number of positive integral solutions of x^4 - $y^4 = 3789108$ is a.0 b. 1 c. 2 d. 4 Watch Free Video Solution on Doubtnut
335	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** If $xy = 2(x + y), x \leq yandx, y \in N,$ then the number of solutions of the equation are a. two b. c. no solution d. infinitely many solutions Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

336	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometrical Meaning Of Roots (Zeros) Of An Equation** If α, β, γ are such that $\alpha+\beta+\gamma=2, \alpha^2+\beta^2+\gamma^2=6, \alpha^3+\beta^3+\gamma^3=8, then \alpha^4+\beta^4+\gamma^4$ is a. 10 c. 15 d. 36 Watch Free Video Solution on Doubtnut
337	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The number of integral values of a for which the quadratic equation $(x+a)(x+1991)+1=$ integral roots are a. 3 b.0 c.1 d. 2 Watch Free Video Solution on Doubtnut
338	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The number of real solutions of the equation $(9/10)^x=-3+x-x^2$ is a. 2 b. 0 c. 1 d. no these Watch Free Video Solution on Doubtnut
339	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The number of real solutions of $\lvert x\rvert+2\sqrt{5-4x-x^2}=16$ is/are a. 6 b. 1 c. 0 d. 4 Watch Free Video Solution on Doubtnut
340	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the equation $\cot^4 x-2\mathrm{cosec}^2 x+a^2=0$ has at least one solution, then the sum of all pos integral values of a is equal to a. 4 b. 3 c. 2 d. 0 Watch Free Video Solution on Doubtnut
341	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Let x, y, z, t be real numbers $x^2+y^2=9, z^2+t^2=4, and xt-yz=6.$ Then the greatest valu $P=xz$ is a. 2 b. 3 c. 4 d. 6 Watch Free Video Solution on Doubtnut

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation

If a, b, c are distinct positive numbers, then the nature of roots of the equa $1/(x-a)+1/(x-b)+1/(x-c)=1/x$ is a. all real and is distinct b. all real and at least tw distinct c. at least two real d. all non-real

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

If $\left(b^2-4ac\right)^2\left(1+4a^2\right)<64a^2, a<0$, then maximum value of quadratic expression ax^2+ is always less than a. 0 b. 2 c. -1 d. -2

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

For $x^2-(a+3)|x|+4=0$ to have real solutions, the range of a is $(-\infty, -7]\cup[1,\infty)$ b. $(-3,$ $(-\infty, -7)$ d. $[1,\infty)$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

If the quadratic equation$4x^2-2(a+c-1)x+ac-b=0(a>b>c)$ (a)Both roots se greater t (b)Both roots are less than c (c)Both roots lie between $\frac{c}{2}$ and $\frac{a}{2}$ (d)Exactly one of the root between $\frac{c}{2}$ and $\frac{a}{2}$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

	EQUATIONS_Geometrical Representation Of A Complex Number If the equation $x^2 = ax + b = 0$ has distinct real roots and $x^2 + a\|x\| + b = 0$ has only one real then which of the following is true? $b = 0, a > 0$ b. $b = 0, a < 0$ c. $b > 0, a < 0$ d. $b\langle 0, a\rangle 0$ Watch Free Video Solution on Doubtnut
346	
347	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the equation $\left\|x^2 + bx + c\right\| = k$ has four real roots, then A. $b^2 - 4c > 0$ and $0 < k < \frac{4c - b}{4}$ $b^2 - 4c < 0$ and $0 < k < \frac{4c - b^2}{4}$ C.$b^2 - 4c > 0$ and $k > \frac{4c - b^2}{4}$ D. none of these Watch Free Video Solution on Doubtnut
348	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** $P(x)$ is a polynomial with integral coefficients such that for four distinct inte $a, b, c, d, P(a) = P(b) = P(c) = P(d) = 3.$ If$P(e) = 5$ (e is an integer), then $e = 1$ b. $e = 3$ c. $e =$ no real value of e Watch Free Video Solution on Doubtnut
349	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** The number of integral value of x satistying $\sqrt{x^2 + 10x - 16} < x - 2$ is Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

350	If $x^2 + ax - 3x - (a+2) = 0$ has real and distinct roots, then the minimum value $\left(a^2+1\right)/\left(a^2+2\right)$ is 1 b. 0 c. $\frac{1}{2}$ d. $\frac{1}{4}$ Watch Free Video Solution on Doubtnut
351	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** The set of value of a for which $(a-1)x^2(a+1)x + a - 1 \geq 0$ is true for all $x \geq 2$ is $(-\infty, 1)$ b. (c. $\left(\frac{7}{3}, \infty\right)$ d. none of these Watch Free Video Solution on Doubtnut
352	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The value of expression $x^4 - 8x^3 + 18x^2 - 8x + 2 when x = 2 + \sqrt{3}$ 2 b. 1 c. 0 d. 3 Watch Free Video Solution on Doubtnut
353	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If the equation $ax^2 + bx + c = x$ has no real roots, then the equa $a\left(ax^2+bx+c\right)^2 + b\left(ax^2+bx+c\right) + c = x$ will have a. four real roots b. no real root c. at two least roots d. none of these Watch Free Video Solution on Doubtnut
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	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

354	**EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let $f(x) = x^2 + bx + c, whereb, c \in R\cdot$ If $f(x)$ is a factor of both $x^4 + 6x^2 + 25and3x^4 + 4x^4 + 28x$ then the least value of $f(x)$ is 2 b. 3 c. $5/2$ d. 4 Watch Free Video Solution on Doubtnut
355	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Location Of Roots** The set of values of a for which $ax^2 + (a - 2)x - 2$ is negative for exactly two integral x, is $(0,$ $[1, 2)$ c. $(1, 2]$ d. $(0, 2]$ Watch Free Video Solution on Doubtnut
356	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Location Of Roots** If $ax^2 + bx + c = 0$ has imaginary roots and $a - b + c > 0$ then the set of points (x, y) satisfyin equation $\left\|a\left(x^2 + \frac{y}{a}\right) + (b+1)x + c\right\| = \left\|ax^2 + bx + c\right\| + \|x + y\|$ consists of the region in $xy - plane$ which is on or above the bisector of I and III quadrant on or above the bisecto and IV quadrant on or below the bisector of I and III quadrant on or below the bisector of I IV quadrant Watch Free Video Solution on Doubtnut
357	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Solving Cubic Equation** If a_0, a_1, a_2, a_3 are all the positive, then $4a_0x^3 + 3a_1x^2 + 2a_2x + a_3 = 0$ has least one ro $(-1, 0)$ if (a) $a_0 + a_2 = a_1 + a_3$ and $4a_0 + 2a_2 > 3a_1 + a_3$ (b) $4a_0 + 2a_2 < 3a_1 + a_3$ $4a_0 + 2a_2 = 3a_1 + a_0$and $4a_0 + a_2 < a_1 + a_3$ (d) none of these Watch Free Video Solution on Doubtnut
358	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Solving Cubic Equation** If p, q, r, s ae rational numbers and the roots of $f(x) = 0$ are eccentricities of a parabola a rectangular hyperbola, where $f(x) = px^3 + qx^2 + rx + s, thenp + q + r + s =\ p$ b. $-p$ c. $2p$ d. 0 Watch Free Video Solution on Doubtnut
359	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the roots $x^5 - 40x^4 + Px^3 + Qx^2 + Rx + S = 0$ are n G.P. and the sum of their reciprocals i then $\|S\|$ is 4 b. 6 c. 8 d. none of these Watch Free Video Solution on Doubtnut

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360	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Quadratic Expression In Two Variables** If $x, y \in Rand2x^2 + 6xy + 5y^2 = 1, then\ |x| \leq \sqrt{5}$ b. $|x| \geq \sqrt{5}$ c. $y^2 \leq 2$ d. $y^2 \leq 4$ Watch Free Video Solution on Doubtnut
361	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Solving Cubic Equation** If the equation whose roots are the squares of the roots of the cubic $x^3 - ax^2 + bx - 1 =$ identical with the given cubic equation, then $a = 0, b = 3$ b. $a = b = 0$ c. $a = b = 3$ d. a, b roots of$x^2 + x + 2 = 0$ Watch Free Video Solution on Doubtnut
362	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Quadratic Equation** If the equation $ax^2 + bx + c = 0, a, b, c, \in R$ have none-real roots, then $c(a - b + c) >$ $c(a + b + c) > 0$ c. $c(4a - 2b + c) > 0$ d. none of these Watch Free Video Solution on Doubtnut
363	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Key Points In Solving An Equation** If $c \neq 0$ and the equation $p/(2x) = a/(x + c) + b/(x - c)$ has two equal roots, then p ca $\left(\sqrt{a} - \sqrt{b}\right)^2$ b. $\left(\sqrt{a} + \sqrt{b}\right)^2$ c. $a + b$ d. $a - b$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR **EQUATIONS_Common Root(S)**

364	If the equation $4x^2 - x - 1 = 0 and 3x^2 + (\lambda + \mu)x + \lambda - \mu = 0$ have a root common, then he ra values of $\lambda and \mu$ are $\lambda = \frac{-3}{4}$ b. $\lambda = 0$ c. $\mu = \frac{3}{4}$ b.$\mu = 0$ Watch Free Video Solution on Doubtnut
365	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the equation $ax^2 + bx + c = 0 (a > 0)$ has two real roots $\alpha and \beta$ such that $\alpha < -2$ and $\beta > 2$, which of the following statements is/are true? (a)$a - \lvert b \rvert + c < 0$ (b)$c < 0, b^2 - 4ac > 0$ $4a - 2\lvert b \rvert + c < 0$ (d) $9a - 3\lvert b \rvert + c < 0$ Watch Free Video Solution on Doubtnut
366	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If fig shows the graph of $f(x) = ax^2 + bx + c, then$ Fig $ac < 0$ b. $bc > 0$ c. $ab > 0$ d. $abc < 0$ Watch Free Video Solution on Doubtnut
367	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** if diagonals of a parallelogram bisect each other,prove that its a rhombus Watch Free Video Solution on Doubtnut
368	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Referred to the principal axes as the axes of co ordinates find the equation of hyperbola w focii are at $\left(0, \pm\sqrt{10}\right)$ and which passes through the point $(2, 3)$ Watch Free Video Solution on Doubtnut

369

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

If α, β are the roots of the quadratic equation $ax^2 + bx = c = 0$, then which of the follo expression will be the symmetric function of roots a. $\left|\log\left(\frac{\alpha}{\beta}\right)\right|$ b. $\alpha^2\beta^5 + \beta^2\alpha^5$ c. $tan(\alpha$ - $\left(\log\left(\frac{1}{\alpha}\right)\right)^2 + (\log\beta)^2$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

If the quadratic equation $ax^2 + bx + c = 0(a > 0)$ has $\sec^2\theta and cosec^2\theta$ as its roots, then whi the following must hold good? a. $b + c = 0$ b. $b^2 - 4ac \geq 0$ c. $\geq 4a$ d. $4a + b \geq 0$

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371

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

Let $a, b, c \in Q^+$ satisfying $a > b > \cdot$ Which of the following statements (s) hold true c quadratic polynomial $f(x) = (a + b - 2c)x^2 + (b + c - 2a)x + (c + a - 2b)$? The mouth of the par $y = f(x)$ opens upwards Both roots of the equation $f(x) = 0$ are rational The x-coordina vertex of the graph is positive The product of the roots is always negative

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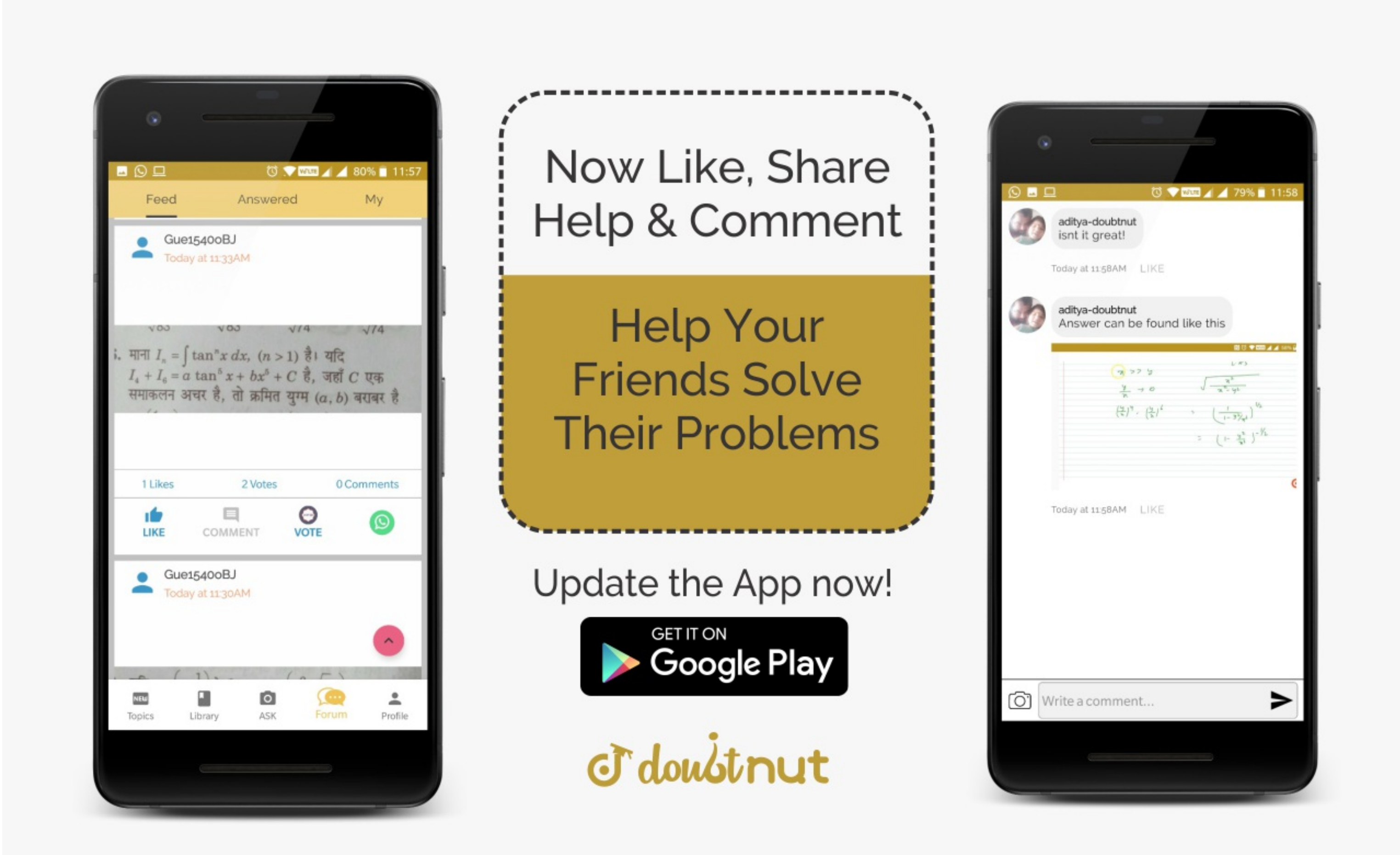
372

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

The graph of the quadratic trinomial $u = ax^2 + bx + c$ has its vertex at (4, -5) and tw intercepts, one positive and one negative. Which of the following holds good? $a > 0$ b. $b <$

	< 0 d. $8a = b$ Watch Free Video Solution on Doubtnut
373	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If $(\sin\alpha)x^2 - 2x + b \geq 2,$ for all real values of $x \leq 1 and \alpha \in \left(0, \frac{\pi}{2}\right) \cup (\pi/2, \pi),$ then possible value of b is /are $a2$ b. 3 c. 4 d. 5 Watch Free Video Solution on Doubtnut
374	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $\left(18x^2 + 12x + 4\right)^n = a_0 + a_{1x} + a_{2x}^2 + \ldots\ldots + a_{2n}x^{2n}$, prove that $a_r = 2^n 3^r$ $({}^{2n}C_r$+ ${}^{n}C_1{}^{2n-2}C_r$- ${}^{2n-4}C_r$ + ... Watch Free Video Solution on Doubtnut
375	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If a, b, c real in G.P., then the roots of the equation $ax^2 + bx + c = 0$ are in the ratio $\frac{1}{2}\left(-1\right.$ - b. $\frac{1}{2}\left(1 - i\sqrt{3}\right)$ $\cdot \frac{1}{2}\left(-1 - i\sqrt{3}\right)$ d. $\frac{1}{2}\left(1 + i\sqrt{3}\right)$ Watch Free Video Solution on Doubtnut
376	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $ax^2 + (b - c)x + a - b - c = 0$ has unequal real roots for all $c \in R, then$ Watch Free Video Solution on Doubtnut
377	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Given that α, γ are roots of the equation $Ax^2 - 4x + 1 = 0, and \beta, \delta$ the roots of the equatio $Bx^2 - 6x + 1 = 0,$ such that $\alpha, \beta, \gamma, and \delta$ are in H.P., then a.$A = 3$ b. $A = 4$ $B = 2$ d. $B = 8$ Watch Free Video Solution on Doubtnut

	
378	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If the equations $x^2 + px + q = 0andx^2 + p'x + q' = 0$ have a common root, then it must be to a. $\frac{p' - p'q}{q - q'}$ b. $\frac{q - q'}{p' - p}$ c. $\frac{p' - p}{q - q'}$ d. $\frac{pq' - p'q}{p - p'}$ Watch Free Video Solution on Doubtnut
379	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If $x^3 + 3x^2 - 9x + c$ is of the form $(x - \alpha)^2(x - \beta)$, then c is equal to a. 27 b. -27 c. 5 d. -5 Watch Free Video Solution on Doubtnut
380	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If the equation $x^2 + bx - a = 0andx^2 - ax + b = 0$ have a common root, then a. $a + b = 0$ b. $a =$ $a - b = 1$ d. $a + b = 1$ Watch Free Video Solution on Doubtnut
381	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If $\left(x^2 + ax + 3\right)/\left(x^2 + x + a\right)$ takes all real values for possible real values of x, the

$4a^2 + 39 < 0$ b. $4a^5 + 39 > 0$ c. $a \geq \frac{1}{4}$ d. $a < \frac{1}{4}$

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382

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots

If $\cos^4\theta + \alpha$ and $\sin^4\theta + \alpha$ are the roots of the equation $x^2 + 2bx + b = 0 and \cos^2\theta + \beta, \sin^2\theta +$ the roots of the equation $x^2 + 4x + 2 = 0,$ then values of b are 2 b. -1 c. -2 d. 2

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

If the roots of the equation $x^2 + ax + b = 0 are c and d,$ then roots of the equa $x^2 + (2c + a)x + c^2 + ac + b = 0$ are a c b. d - c c. $2c$ d. 0

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384

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous

If $a, b, c \in R \ and \ abc < 0$, then equation $bcx^2 + (2b + c - a)x + a = 0 \ has$ (a). both positive (b). both negative roots (c). real roots (d) one positive and one negative root

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385

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

Let $P(x) = x^2 + bx + c where b and c$ are integer. If $P(x)$ is a factor of $x^4 + 6x^2 + 25 and 3x^4 + 4x^2 + 28x + 5, then$ a.$P(x) = 0$ has imaginary roots b.$P(x) = 0$ has roo opposite c.$P(1) = 4$ d .$P(1) = 6$

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386

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

If $\left|ax^2+bx+c\right| \leq 1$ for all x in [0, 1], then $|a| \leq 8$ b. $|b| > 8$ c. $|c| \leq 2$ d. $|a|+|b|+|c| \leq 19$

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

Let $f(x) = ax^2 + bx + \cdot$ Consider the following diagram. Then Fig $c < 0$ $b > 0$ $a + b - c > 0$ ab

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

If roots of $ax^2+bx+c=0$ are $\alpha and \beta and 4a+2b+c>0, 4a, -2b+c>0, and c<0,$ then pos values /values of $[\alpha]+[\beta]$ is/are (where [.] represents greatest integer function) a.-2 b.-1c.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

The equation $\left(\frac{x}{x+1}\right)^2+\left(\frac{x}{x-1}\right)^2=a(a-1)$ has a. Four real roots if $a>2$ b.Four real ro $a<-1$ c Two real roots if `1

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

390	Let a is a real number satisfying $a^3 + \frac{1}{a^3} = 18$. Then the value of $a^4 + \frac{1}{a^4} - 39$ is ____. Watch Free Video Solution on Doubtnut
391	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Let $P(x) = \frac{5}{3} - 6x - 9x^2 and Q(y) = -4y^2 + 4y + \frac{13}{2}\cdot$ if there exists unique pair of real numbers such that $P(x)Q(y) = 20$, then the value of $(6x + 10y)$ is _____. Watch Free Video Solution on Doubtnut
392	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Let $P(x) = x^3 - 8x^2 + cx - d$ be a polynomial with real coefficients and with all it roots distinct positive integers. Then number of possible value of c is___________. Watch Free Video Solution on Doubtnut
393	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Inequalities Using Location Of Roots** Let α_1, β_1 be the roots $x^2 - 6x + p = 0 and\ \alpha_2, \beta_2$ be the roots $x^2 - 54x + q = 0\cdot$ If $\alpha_1, \beta_1, \alpha_2, \beta_2$ an increasing G.P., then sum of the digits of the value of $(q - p)$ is ___________. Watch Free Video Solution on Doubtnut
394	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** If the equation $2x^2 + 4xy + 7y^2 - 12x - 2y + t = 0, where t$ is a parameter has exactly one solution of hte form (x, y) , then hte sum of $(x + y)$ is equal to ______. Watch Free Video Solution on Doubtnut
395	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems** Polynomial $P(x)$ is divided by $(x - 3)$, the remainder if 6.If $P(x)$ is divided by $\left(x^2 - 9\right)$, the remainder is $g(x)$. Then the value of $g(2)$ is ___________. Watch Free Video Solution on Doubtnut

396

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

If set of values a for which $f(x) = ax^2 - (3 + 2a)x + 6a \neq 0$ is positive for exactly three di negative integral values of x is $(c, d]$, then the value of $\left(c^2 + 4|d|\right)$ is equal to ________.

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397

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

Given $\alpha and \beta$ are the roots of the quadratic equation $x^2 - 4x + k = 0 (k \neq 0)$. If $\alpha\beta, \alpha\beta^2 + \alpha^2\beta, \alpha$ are in geometric progression, then the value of $7k/2$ equals___________.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

If the equation $x^2 + 2(\lambda + 1)x + \lambda^2 + \lambda + 7 = 0$ has only negative roots, then the least value equals___________.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

Let $P(x) = x^4 + ax^3 + bx^2 + cx + d$ be a polynomial such $P(1) = 1, P(2) = 8, + P(3) = 27, P(4) = 64$ then the value of $152 - P(5)$ is_____________.

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400

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation

If $\sqrt{\sqrt{\sqrt{x}}} = x^4 + 4444$, then the value of x^4 is____.

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401	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Number of positive integers x for which $f(x) = x^3 - 8x^2 + 20x - 13$ is a prime number is______ Watch Free Video Solution on Doubtnut
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402	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If equation $x^4 - (3m+2)x^2 + m^2 = 0 (m > 0)$ has four real solutions which are in A.P., the value of m is______. Watch Free Video Solution on Doubtnut
403	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** The quadratic polynomial $p(x)$ has the following properties:$p(x) \geq 0$ for all real numl $p(1) = 0 and p(2) = 2$. Find the value of $p(3)$ is__________. Watch Free Video Solution on Doubtnut

404	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** function f , R $\rightarrow$ R , $f(x)=\dfrac{3x^2+mx+n}{x^2+2}$, if the range of function is [-4,3), find the value of | is .... Watch Free Video Solution on Doubtnut
405	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $a and b$ are positive numbers and eah of the equations $x^2+ax+2b=0 and x^2+2bx+a=$ (real roots, then the smallest possible value of $(a+b)$ is__________. Watch Free Video Solution on Doubtnut
406	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Suppose a, b, c are the roots of the cubic $x^3-x^2-2=0.$ Then the value of $a^3+b^3+c^3$ is __ Watch Free Video Solution on Doubtnut
407	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Remainder And Factor Theorems** Given that $x^2-3x+1=0,$ then the value of the expression $y=x^9+x^7+x^{-9}+x^{-7}$ is divisib prime number. Watch Free Video Solution on Doubtnut
	

408	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Suppose $a, b, c \in I$ such that the greatest common divisor fo $x^2 + ax + bandx^2 + bx + cis($ and the least common ultiple of $x^2 + ax + bandx^2 + bx + c$ is $\left(x^3 - 4x^2 + x + 6\right)$. Then the valu $\|a + b + c\|$ is equal to ____________. Watch Free Video Solution on Doubtnut
409	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If the roots of ht cubic, $x^3 + ax^2 + bx + c = 0$ are three consecutive positive integers, the value of $\left(a^2/b + 1\right)$ is equal to ___________. Watch Free Video Solution on Doubtnut
410	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If $x + y + z = 12andx^2 + y^2 + z^2 = 96and\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 36,$ then the value $x^3 + y^3 + z^3$ divisib prime number is_________. Watch Free Video Solution on Doubtnut
411	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Let $\alpha and\beta$ be the solutions of the quadratic equation $x^2 - 1154x + 1 = 0$, then the valu $\alpha^{\frac{1}{4}} + \beta^{\frac{1}{4}}$ is equal to ______. Watch Free Video Solution on Doubtnut
412	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** The function k$f(x) = ax^2 + bx^2 + cx + d$ has three positive roots. If the sum of the roots of $f(x$ the larget possible inegal values of c/a is _____________. Watch Free Video Solution on Doubtnut
413	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Let $x^2 + y^2 + xy + 1 \geq a(x + y) \forall x, y \in R,$ then the number of possible integer (s) in the rang is____________. Watch Free Video Solution on Doubtnut

414

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation

a, b, and c are all different and non-zero real numbers on arithmetic progression. If the ro quadratic equation $ax^2+bx+c=0$ are α and β such that $\frac{1}{\alpha}+\frac{1}{\beta}, \alpha+\beta, and \alpha^2+\beta^2$ a geometric progression the value of a/c will be_____.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

All he value of k for which the quadratic polynomial $f(x)=2x^2+kx+k^2+5$ has two di zeroes and only one of them satisfying `0

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416

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots

The quadratic equation $x^2+mx+n=0$ has roots which are twice those $x^2+px+m=0adm, nandp \ne 0.$ The n the value of n/p is _____.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous

Let $a, b, andc$ be rel numbers which satisfy the equation $a+\frac{1}{bc}=\frac{1}{5}, b+\frac{1}{ac}=\frac{-1}{15}, andc+\frac{1}{ab}$

The value of $\frac{c-b}{c-a}$ is equal to ________.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous

418

If a, b, c are non-zero real numbers, then the minimum value of the expres
$\left(\frac{\left(a^4+3a^2+1\right)\left(b^4+5b^2+1\right)\left(c^4+7c^2+1\right)}{a^2b^2c^2}\right)$ is not divisible by prime number.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Miscellaneous

If $a, b, \in R$ such that $a+b=1 and (1-2ab)\left(a^3+b^3\right)=12$. The value of $\left(a^2+b^2\right)$ is (
to____.

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Solving Cubic Equation

If the cubic $2x^3-9x^2+12x+k=0$ has two equal roots then minimum value of $|k|$ is______.

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421

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Miscellaneous

Let $a, b, and c$ be distinct nonzero real numbers such that $\frac{1-a^3}{a}=\frac{1-b^3}{b}=\frac{1-c^3}{c}$. The valu
$\left(a^3+b^3+c^3\right)$ is ______________.

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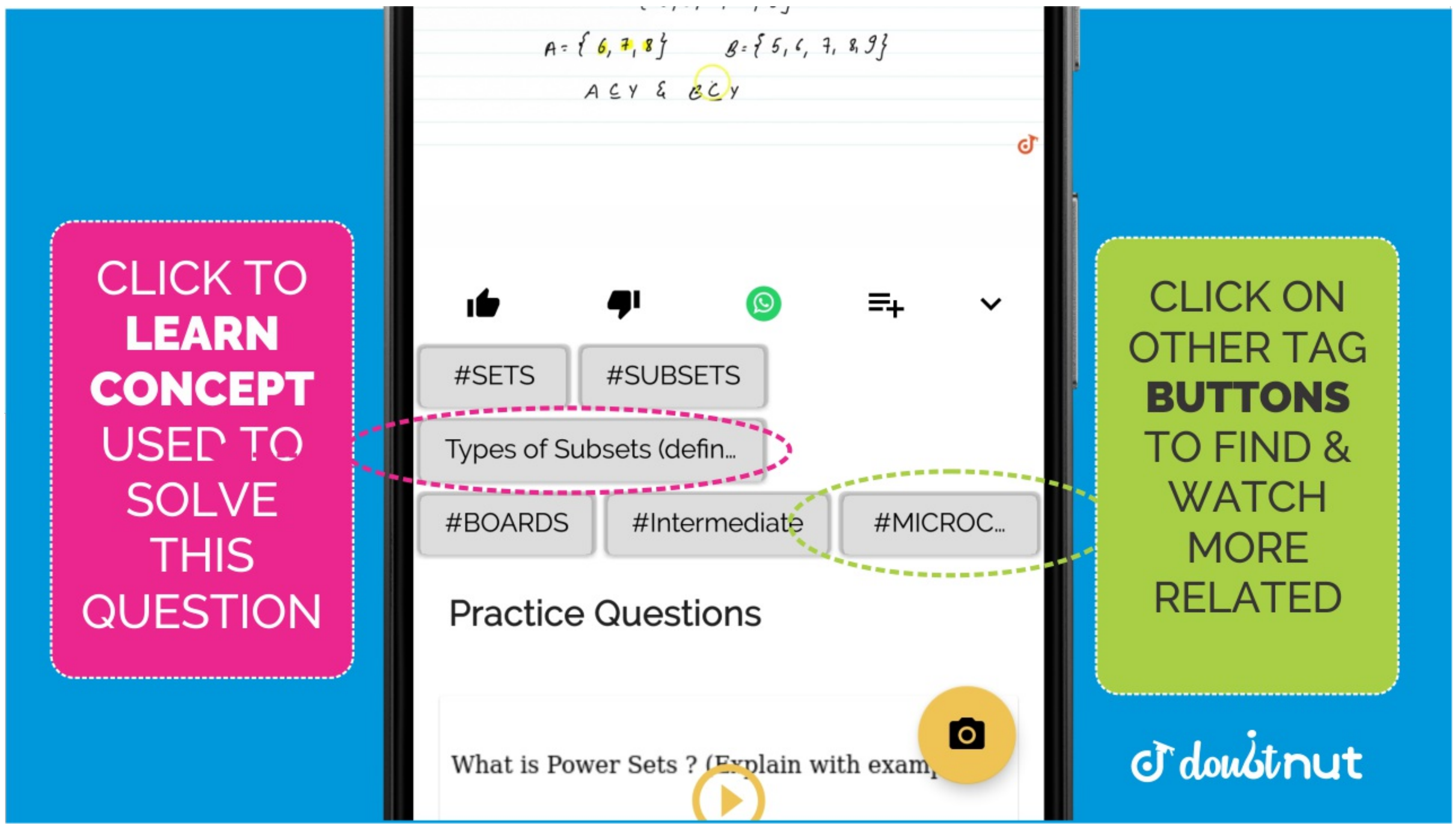
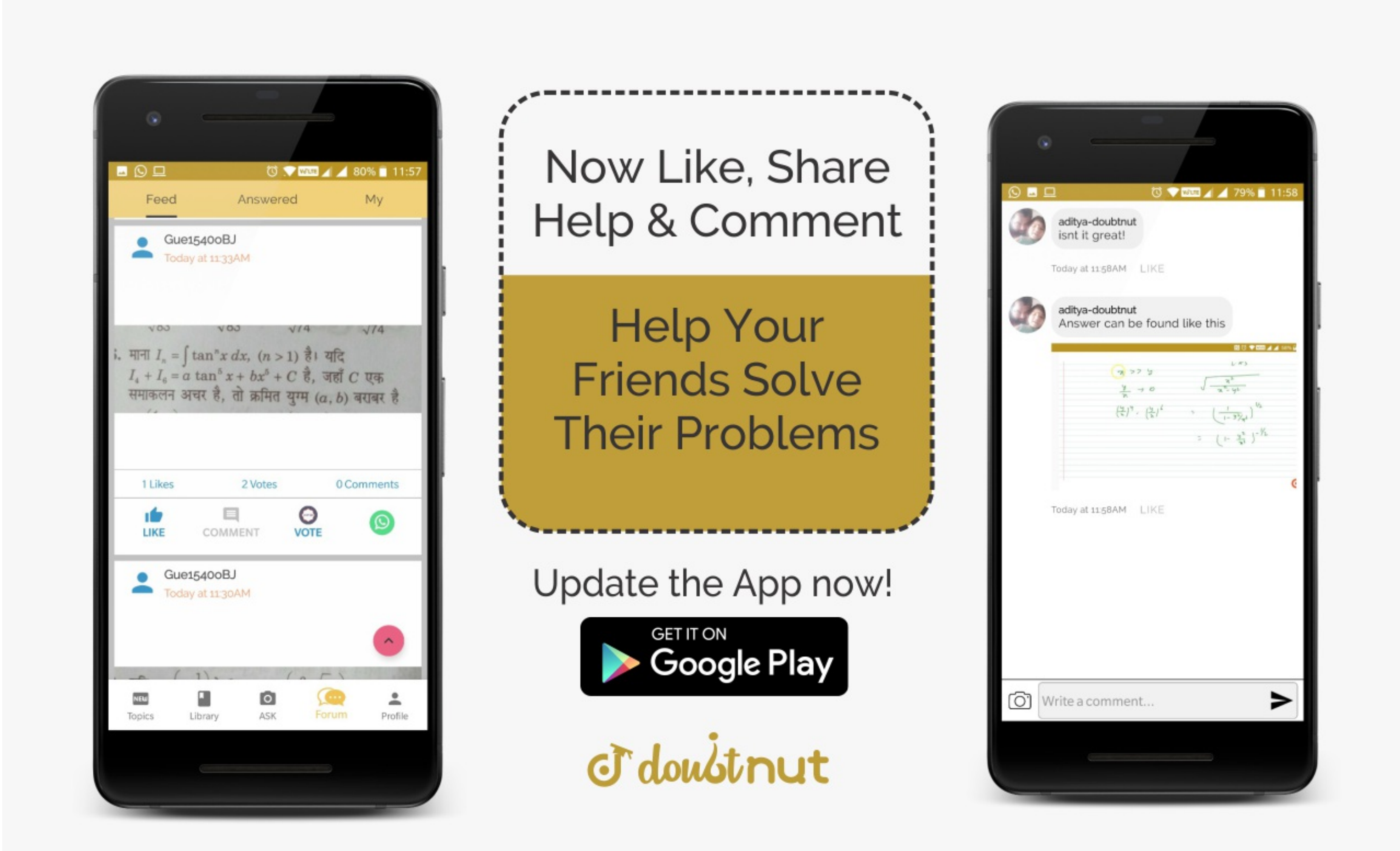
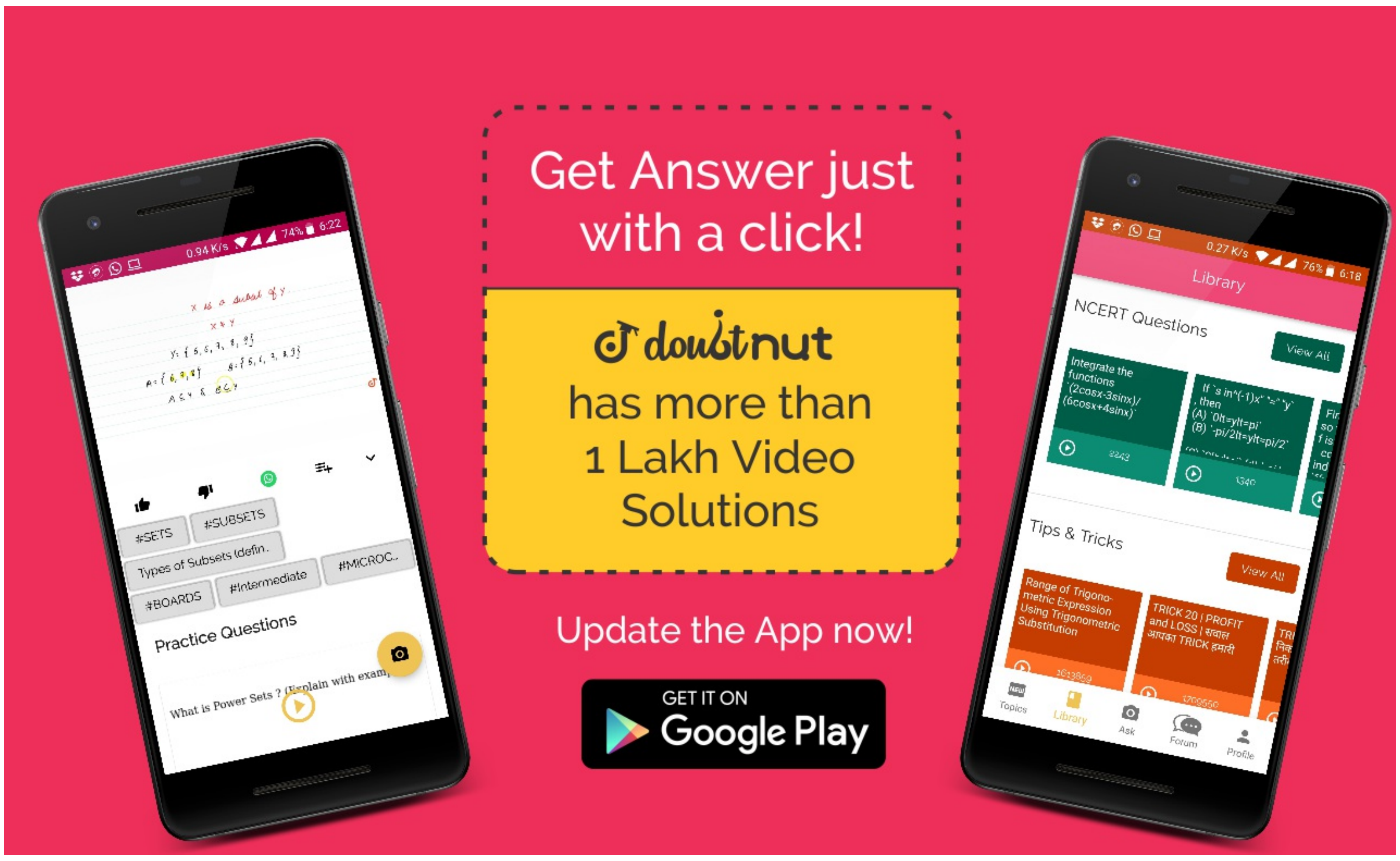
CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Solving Cubic Equation

422	If the fraction $\frac{x^3 + (a - 10)x^2 - x + a - 6}{x^3 + (a - 6)x^2 - x + a - 10}$ reduces to a quotient of two functions, th equals______. Watch Free Video Solution on Doubtnut
423	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If $a + b + c = 0, a^2 + b^2 + c^2 = 4, then a^4 + b^4 + c^4$ is_____. Watch Free Video Solution on Doubtnut
424	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Solve for x: $4^x - 3^{x - 1/2} = 3^{x + 1/2} - 2^{2x - 1}$. Watch Free Video Solution on Doubtnut
425	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve for x: $\sqrt{x + 1} - \sqrt{x - 1} = 1$. Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

426	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Show that the square to $\left(\sqrt{26 - 15\sqrt{3}}\right)/\left(5\sqrt{2} - \sqrt{38 + 5\sqrt{3}}\right)$ is a rational number. Watch Free Video Solution on Doubtnut
427	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** If α, β are the roots of $x^2 + px + q = 0 and \gamma, \delta$ are the roots of $x^2 + rx + s = 0$, eval $(\alpha - \gamma)(\alpha - \delta)(\beta - \gamma)(\beta - \delta)$ in terms of $p, q, r, and s$. Deduce the condition that the equation h common root. Watch Free Video Solution on Doubtnut
428	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Show that for any triangle with sides $a, b, and c 3(ab + bc + ca) < (a + b + c)^2 < 4(bc + ca$ When are the first two expressions equal ? Watch Free Video Solution on Doubtnut
429	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** For what value of m does the system of equations $3x + my = m, 2x - 5y = 20$ has so satisfying the conditions $x > 0, y > 0$? Watch Free Video Solution on Doubtnut
430	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Find the solution set of the system $x + 2y + z = 1 \ 2x - 3y - w = 2 \ x \geq 0, y \geq 0, z \geq 0, w \geq 0$ Watch Free Video Solution on Doubtnut
431	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If one root of the quadratic equation $ax^2 + bx + c = 0$ is equal to the nth power of the other, show that $\left(ac^n\right)^{\frac{1}{n+1}} + \left(a^n c\right)^{\frac{1}{n+1}} + b = 0$ Watch Free Video Solution on Doubtnut



432	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Equations Reducible To Quadratic** Solve for x: $\left(5+2\sqrt{6}\right)^{x} \wedge (2-3)+\left(5-2\sqrt{6}\right)^{x} \wedge (2-3)=10.$ Watch Free Video Solution on Doubtnut
433	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** For a $a \leq 0$, determine all real roots of the equation $x^2-2a\lvert x-a\rvert-3a^2=0.$ Watch Free Video Solution on Doubtnut
434	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** Let a, b, c be real. If $ax^2+bx+c=0$ has two real roots $\alpha and \beta, where \alpha\langle -1 and \beta\rangle 1$, then show $1+\frac{c}{a}+\left\lvert\frac{b}{a}\right\rvert<0$ Watch Free Video Solution on Doubtnut
435	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** The real numbers x_1, x_2, x_3 satisfying the equation $x^3-x^2+bx+\gamma=0$ are in A.P. Fin intervals in which $\beta and \gamma$ lie. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous Let S be a square of nit area. Consider any quadrilateral, which has none vertex on each

436	of $S.$ If $a, b, candd$ denote the lengths of the sides of het quadrilateral, prove $2 \leq a^2 + b^2 + c^2 + x^2 \leq 4.$ Watch Free Video Solution on Doubtnut
437	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Let $f(x) = Ax^2 + Bx + c, whereA, B, C$ are real numbers. Prove that if $f(x)$ is an integer whene is an integer, then the numbers $2A, A + B, andC$ are all integer. Conversely, prove that number $2A, A + B, andC$ are all integers, then $f(x)$ is an integer whenever x is integer. Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
438	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** If α, β are the roots of $ax^2 + bx + c = 0(a \neq 0)and\alpha + \delta, \beta + \delta$ are roots of $Ax^2 + Bx + C = 0($ for some constant δ , then prove that $b^2 - 4ac/a^2 = \left(B^2 - 4AC\right)/A^2.$ Watch Free Video Solution on Doubtnut
439	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let a, b, c be real numbers with $a \neq 0andlet\alpha, \beta$ be the roots of the equation $ax^2 + bx + c$ Express the roots of $a^3x^2 + abcx + c^3 = 0$ in terms of $\alpha, \beta.$ Watch Free Video Solution on Doubtnut
440	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $x^2 + (a - b)x = (1 - a - b) = 0. wherea, b \in R,$ then find the values of a for which equatior unequal real roots for all values of $b.$

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441	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let $aandb$ be the roots of the equation $x^2 - 10cx - 11d = 0$ and those of $x^2 - 10ax - 11b = 0c$ then find the value of $a + b + c + \ddot{whena} \neq b \neq c \neq ..$ Watch Free Video Solution on Doubtnut
442	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Fill in the blanks The coefficient of x^{99} in the polynomial $(x - 1)(x - 2)\ldots\ldots\ldots.(x - 100)is$ _ _ _ Watch Free Video Solution on Doubtnut
443	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Fill in the blanks If $2 + i\sqrt{3}$ is a root of the equation $x^2 + px + q = 0, wherepandq$ are real, $(p, q) = \left(\_\_\_\_, \_\_\_\right)$. Watch Free Video Solution on Doubtnut

444	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Fill in the blanks If the product of the roots of the equation $x^2 - 3kx + 2e^{21nk} - 1 = 0$ is 7, the roots are real for______________. Watch Free Video Solution on Doubtnut

445	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** Fill in the blanks If the quadratic equations $x^2 + ax + b = 0 and x^2 + bx + a = 0 (a \neq b)$ ha common root, then the numerical value of $a + b$ is _________. Watch Free Video Solution on Doubtnut
446	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Expression In Two Variables** Fill in the blanks $x < 0, y < 0, x + y + (x/y) = (1/2) and (x + y)(x/y) = -(1/2), then x = \_\_\_\_\_\_\_\_ and y = \_\_$ Watch Free Video Solution on Doubtnut
447	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If l, m, n are real $l \neq m$, then the roots of the equation $(l-m)x^2 - 5\left(l_+m\right)x - 2(l-m) = 0$ are a and equal b. Complex c. real and unequal d. none of these Watch Free Video Solution on Doubtnut
448	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** If $x, y, and z$ are real and different and $u = x^2 + 4y^2 + 9z^2 - 6yz - 3zx - 2xy, the v$ is always a. negative b. zero c. non-positive d. none of these Watch Free Video Solution on Doubtnut
449	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $a > 0, b > 0 and c > 0$, then the roots of the equation $ax^2 + bx + c = 0$ have positive are parts have positive real parts have negative real parts none of these Watch Free Video Solution on Doubtnut

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450	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** Both the roots of the equation $(x-b)(x-c)+(x-a)(x-c)+(x-a)(x-b)=0$ are always a. po b. real c. negative d. none of these Watch Free Video Solution on Doubtnut
451	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** If $\left(x^2+px+1\right)$ is a factor of $\left(ax^3+bx+c\right)$, $then\ a^2+c^2=-ab$ b. $a^2-c^2=-ab$ c. $a^2-c^2=$ none of these Watch Free Video Solution on Doubtnut
452	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Two towns A and B are 60 km a part. A school is to be built to serve 150 students in to and 50 students in town B. If the total distance to be travelled by all 200 students is to b small as possible, then the school be built be a. town B b. 45 km from town A c. A d. 45 km from town B Watch Free Video Solution on Doubtnut
453	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The equation $x-\frac{2}{x-1}=1-\frac{2}{x-1}$ has a. no root b. one root c. two equals roots d. Infinitely roots Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression

454	If $a^2+b^2+c^2=1, then ab+bc+ca$ lie in the interval $\left[\frac{1}{3},2\right]$ b. $[-1,2]$ c. $\left[-\frac{1}{2},1\right]$ d. $\left[-1,\frac{1}{2}\right.$ Watch Free Video Solution on Doubtnut
455	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If $\alpha and \beta$ are the roots of $x^2+px+q=0 and \alpha^4, \beta^4$ are the roots of $x^2-rx+s=0$, then equation $x^2-4qx+2q^2-r=0$ has always. A. one positive and one negative root B positive roots C . two negative roots D . cannot say anything Watch Free Video Solution on Doubtnut
456	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let a, b, c be real numbers $a \neq 0.$ If α is a root of $a^2x^2+bx+c=0. \beta$ is the root of `a^2x^2 c=0a n d0 Watch Free Video Solution on Doubtnut
457	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let α, β be the roots of the equation $(x-a)(x-b)=c, c \neq 0.$ Then the roots of the equa $(x-\alpha)(x-\beta)+c=0$ are a, c b. b, c c. a, b d. $a+c, b+c$ Watch Free Video Solution on Doubtnut
458	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** The number of points of intersection of two curves $y=2\sin x and y=5x^2+2x+3 is$ 0 b. 1 c. 2 Watch Free Video Solution on Doubtnut

459	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If p, q, r are positive and are in A.P., the roots of quadratic equation $px^2 + qx + r = 0$ are al for a. $\left\|\frac{r}{p} - 7\right\| \geq 4\sqrt{3}$ b. $\left\|\frac{p}{r} - 7\right\| \geq 4\sqrt{3}$ c. all p and r d. no p and r Watch Free Video Solution on Doubtnut
460	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** The equation $\sqrt{x+1} - \sqrt{x-1} = \sqrt{4x-1}$ has a. no solution b. one solution c. two solution d. than two solutions Watch Free Video Solution on Doubtnut
461	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If the roots of the equation $x^2 - 2ax + a^2 - a - 3 = 0$ are real and less than 3, then (a)$a <$ $2 < \ -a \leq 3$ c. `34` Watch Free Video Solution on Doubtnut
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462	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $\alpha and \beta$ are the roots of the equation $x^2 + bc + c = 0$,where $c < a < b$ then a. $0 < \alpha <$ $\alpha < 0 < \beta < \|\alpha\|$ c. $\alpha < \beta < 0$ d. $\alpha < 0 < \|\alpha\| < \beta$ Watch Free Video Solution on Doubtnut

463	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $b > a$, then the equation $(x - a)(x - b) - 1 = 0$ has (a) both roots in (a, b) (b) both roo $(-\infty, a)$ (c) both roots in $(b, +\infty)$ (d)one root in $(-\infty, a)$ and the other in $(b, +\infty)$ Watch Free Video Solution on Doubtnut
464	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** For the equation $3x^2 + px + 3 = 0, p > 0$, if one of the root is square of the other, then p is to $1/3$ b. 1 c. 3 d. $2/3$ Watch Free Video Solution on Doubtnut
465	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** Let $f(x) = \left(1 + b^2\right)x^2 + 2bx + 1$ and let $m(b)$ be the minimum value of $f(x)\cdot$ As b varies, the r of $m(b)$ is $[0, \}$ b. $\left(0, \frac{1}{2}\right)$ c. $\frac{1}{2}, 1$ d. $(0, 1]$ Watch Free Video Solution on Doubtnut
466	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let α, β be the roots of $x^2 - x + p = 0 and \gamma, \delta$ are roots of $x^2 - 4x + q = 0.$ If $\alpha, \beta, \gamma, \delta$ are in then the integral value of $pandq$, respectively, are $-2, -32$ b. $-2, 3$ c. $-6, 3$ d. $-6, -32$ Watch Free Video Solution on Doubtnut
467	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** If $f(x) = x^2 + 2bc + 2c^2 and g(x) = -x^2 - 2cx + b^2$ are such that min $f(x) > max f(x)$, ten he re between $bandc$ is a. no relation b. `0 Watch Free Video Solution on Doubtnut
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468	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** If one root is square of the other root of the equation $x^2 + px + q = 0,$ then the relation betw $pandq$ is $p^3 - q(3p - 1) + q^2 = 0$ $p^3 - q(3p + 1) + q^2 = 0$ $p^3 + q(3p - 1) + q^2 = 0$ $p^3 + q(3p + 1) + q$ Watch Free Video Solution on Doubtnut
469	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let α, β be the roots of the quadratic equa $ax^2 + bx + c = 0and = b^2 - 4a \cdot If\alpha + \beta, \alpha^2 + \beta^2\alpha^3 + \beta^3$ are in G.P. Then a. $= 0$ b. $\neq 0$ c. $b =$ $c = 0$ Watch Free Video Solution on Doubtnut
470	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let a, b, c be the sides of a triangle, where $a \neq b \neq c$ and $\lambda \in R$. If the roots of the equa $x^2 + 2(a + b + c)x + 3\lambda(ab + bc + ca) = 0$ are real. Then a.$\lambda < \frac{4}{3}$ b. $\lambda > \frac{5}{3}$ c. $\lambda \in \left(\frac{1}{3}, \frac{5}{3}\right.$ $\lambda \in \left(\frac{4}{3}, \frac{5}{3}\right)$ Watch Free Video Solution on Doubtnut
471	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Quadratic Equation** Let α, β be the roots of the equation $x^2 - px + r = 0and\alpha/2, 2\beta$ be the roots of the equa $x^2 - qx + r = 0.$ Then the value of r is $\frac{2}{9}(p - q)(2q - p)$ b. $\frac{2}{9}(q - p)(2q - p)$ c. $\frac{2}{9}(q - 2p)(2q -$ $\frac{2}{9}(2p - q)(2q - p)$

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472	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Solving Cubic Equation** Let $pandq$ be real numbers such that $p \ne 0, p^3 \ne q, andp^3 \ne -q\cdot$ If $\alpha and \beta$ are nonzero cor numbers satisfying $\alpha + \beta = -pand\alpha^2 + \beta^2 = q$, then a quadratic equation having $\alpha / \beta and\beta$ its roots is A. $\left(p^3+q\right)x^2-\left(p^3+2q\right)x+\left(p^3+q\right)=0$ B. $\left(p^3+q\right)x^2-\left(p^3-2q\right)x+\left(p^3+q\right)=$ $\left(p^3+q\right)x^2-\left(5p^3-2q\right)x+\left(p^3-q\right)=0$ D. $\left(p^3+q\right)x^2-\left(5p^3+2q\right)x+\left(p^3+q\right)=0$ Watch Free Video Solution on Doubtnut
473	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Common Root(S)** A value of b for which the equation $x^2+bx-1=0, x^2+x+b=0$ have one root in comm $-\sqrt{2}$ b. $-i\sqrt{3}$ c. $\sqrt{2}$ d. $\sqrt{3}$ Watch Free Video Solution on Doubtnut
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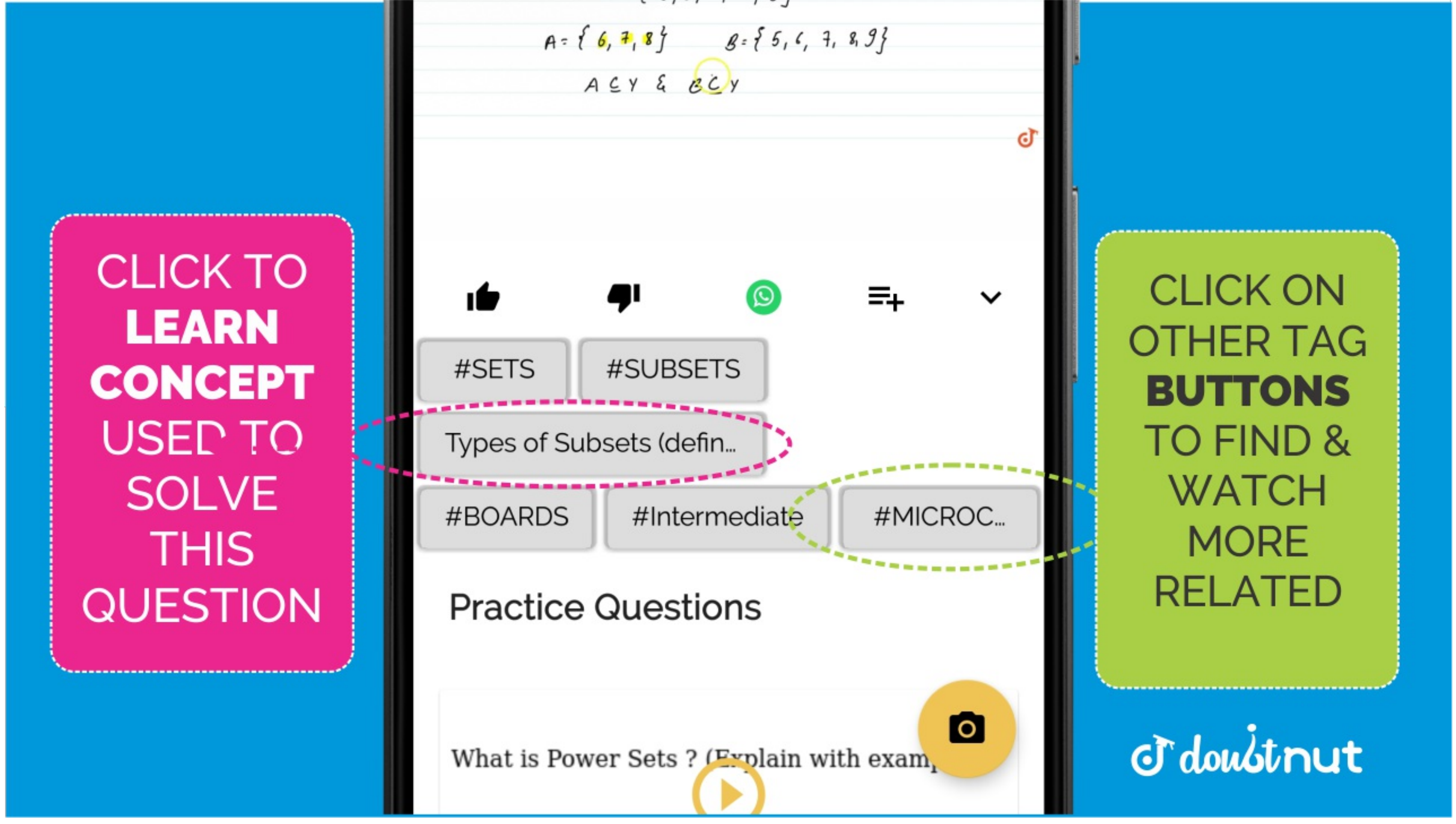
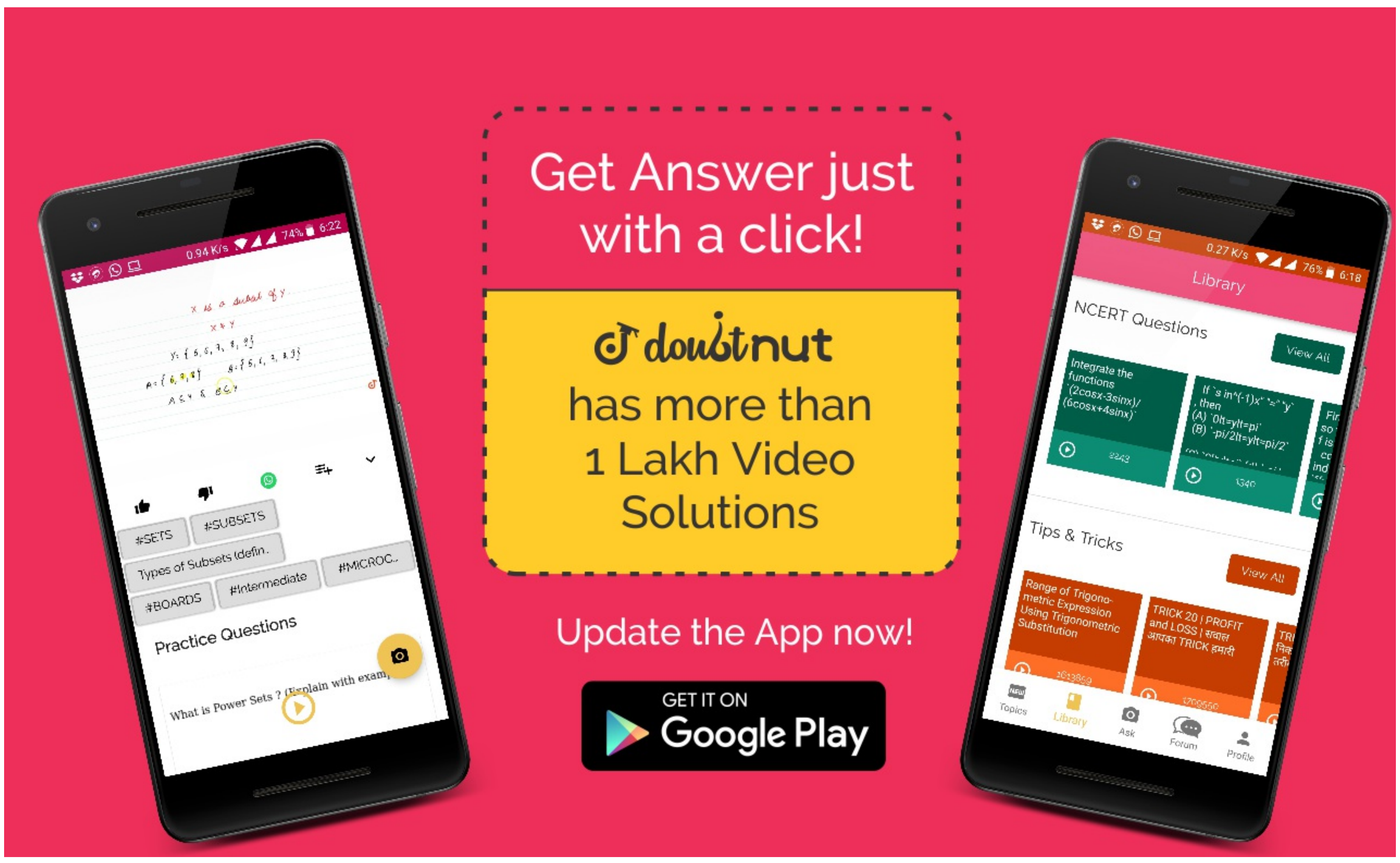
474	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** Let $\alpha and \beta$ be the roots of $x^2-6x-2=0, with\alpha > \beta\cdot$ If $a_n = \alpha^n - \beta^n f$ or $n \ge 1$, then the valu $\frac{a_{10}-2a_8}{2a_9}$ is 1 b. 2 c. 3 d. 4 Watch Free Video Solution on Doubtnut

475	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Relation Between Coefficient And Roots Of Equation** The quadratic equation $p(x) = 0$ with real coefficients has purely imaginary roots. The equation $p(p(x)) = 0$ has A. only purely imaginary roots B. all real roots C. two real and p imaginary roots D. neither real nor purely imaginary roots Watch Free Video Solution on Doubtnut
476	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Finding The Range Of A Function Involving Quadratic Expression** For real x, the function $(x - a)(x - b)/(x - c)$ will assume all real values provided $a > b > c$ b > bd. a Watch Free Video Solution on Doubtnut
477	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Location Of Roots** Let S be the set of all non-zero real numbers such that the quadratic equation $\alpha x^2 - x +$ has two distinct real roots $x_1 and x_2$ satisfying the inequality $\left\|x_1 - x_2\right\| < 1$. Which of the follo intervals is (are) a subset (s) of S? $\left(\frac{1}{2}, \frac{1}{\sqrt{5}}\right)$ b. $\left(\frac{1}{\sqrt{5}}, 0\right)$ c. $\left(0, \frac{1}{\sqrt{5}}\right)$ d. $\left(\frac{1}{\sqrt{5}}, \frac{1}{2}\right)$ Watch Free Video Solution on Doubtnut
478	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\left\|\frac{z}{\left\|\bar{z}\right\|} - \bar{z}\right\| = 1 + \|z\|$, then prove that z is a purely imaginary number. Watch Free Video Solution on Doubtnut
479	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** For $\|z - 1\| = 1$, show that $\tan\left\{\frac{arg(z - 1)}{2}\right\} - \left(\frac{2i}{z}\right) = -i$ Watch Free Video Solution on Doubtnut

	
480	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let the altitudes from the vertices A, B and Cof the triangle e ABCmeet its circumcircle at and F respectively and z_1, z_2 and z_3 represent the points D, E and F respectively. If $\frac{z_3 -}{z_2 -}$ purely real then the triangle ABC is Watch Free Video Solution on Doubtnut
481	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If a, b are complex numbers and one of the roots of the equation $x^2 + ax + b = 0$ is purely whereas the other is purely imaginary, prove that $a^2 - a^{-2} = 4b$. Watch Free Video Solution on Doubtnut
482	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If a is a complex number such that $\|a\| = 1$, then find thevalue of a, so that equa $az^2 + z + 1 = 0$ has one purely imaginary root. Watch Free Video Solution on Doubtnut
483	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Letz, z_0be two complex numbers $z_0$being the cojugate of z_0. The numbers z, z_0, $z\bar{z}_0$,1 and represented in argand diagram by P, P_0, Q, A and origin respectively. If $\|z\| = 1$, ther $\triangle POP_0$ and $\triangle AOQ$ are congruent (B) $\left\|z - z_0\right\| = \left\|z\bar{z}_0 - 1\right\|$ (C) $\left\|z - z_0\right\| = \frac{1}{2}\left\|z\bar{z}_0 - 1\right\|$ (D)no these Watch Free Video Solution on Doubtnut

484	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Show that the equation $az^3 + bz^2 + \bar{b}z + \bar{a} = 0$ has a root α such that $|\alpha| = 1, a, b, z and \alpha$ belo the set of complex numbers. Watch Free Video Solution on Doubtnut
485	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If $x \in (0, \pi/2) and \cos x = 1/3$, then prove that $\sum_{n=0}^{\infty} \frac{\cos nx}{3^n} = \frac{3(3 - \cos x)}{10 - 6\cos x + \cos^2 x}$ Watch Free Video Solution on Doubtnut
486	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem** Show that the equation $Z^4 + 2Z^3 + 3Z^2 + 4Z + 5 = 0$ has no root which is either purely re purely imaginary. Watch Free Video Solution on Doubtnut
487	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $a, b, and c$ be any three nonzero complex number. If $|z| = 1 and' z'$ satisfies the equa $az^2 + bz + c = 0,$ prove that $aa = cc and |a||b| = \sqrt{ac(b)^2}$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem

488	Let $Z_p = r_p\left(\cos\theta_p + i\sin\theta_p\right), p = 1, 2, 3 and \frac{1}{Z_1} + \frac{1}{Z_2} + \frac{1}{Z_3} = 0$. Consider the ABC formed fo by $\frac{\cos 2\theta_1 + i\sin 2\theta_1}{Z_1}, \frac{\cos 2\theta_2 + i\sin 2\theta_2}{Z_2}, \frac{\cos 2\theta_3 + i\sin 2\theta_3}{Z_3}$ Prove that origin lies inside triangle A Watch Free Video Solution on Doubtnut
489	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Introduction** If $a < 0, b > 0,$ then $\sqrt{a}\sqrt{b}$ is equal to (a)- $\sqrt{\lvert a\rvert b}$ (b) $\sqrt{\lvert a\rvert b i}$ (c) $\sqrt{\lvert a\rvert b}$ (d) none of these Watch Free Video Solution on Doubtnut
490	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $x = 9^{\frac{1}{3}}9^{\frac{1}{9}}9^{\frac{1}{27}}......ad$ inf $y = 4^{\frac{1}{3}}4^{-\frac{1}{9}}4^{\frac{1}{27}}......ad$ inf and $z = \sum_{r=1}^{\infty}(1 + i)^{-r}$ then , the argument c complex number $w = x + yz$ is Watch Free Video Solution on Doubtnut
491	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Consider the equation $10z^2 - 3iz - k = 0, wherez$ is a following complex variable and $i^2 =$ Which of the following statements ils true? For real complex numbers k , both roots are p imaginary. For all complex numbers k , neither both roots is real. For all purely imag numbers k , both roots are real and irrational. For real negative numbers k , both root purely imaginary. Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

492	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** The number of solutions of $z^2 + \bar{z} = 0$ is (a) 1 Â Â Â Â Â (b)2 (c) 3 Â Â Â Â Â (d)4 Watch Free Video Solution on Doubtnut
493	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If $a^2 + b^2 = 1 then \frac{1 + b + ia}{1 + b - ia} = 1$ b. 2 c. $b + ia$ d. $a + ib$ Watch Free Video Solution on Doubtnut
494	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $y = \sec\left(\tan^{-1}x\right), then \frac{dy}{dx} atx = 1$ is $\frac{\cos\pi}{4}$ (b) $\frac{\sin\pi}{2}$ $\frac{\sin\pi}{6}$ (d) $\frac{\cos\pi}{3}$ Watch Free Video Solution on Doubtnut
495	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $z_1 and z_2$ be complex numbers such that $z_1 \neq z_2$ and $\left\|z_1\right\| = \left\|z_2\right\|$. If z_1 has positive rea and z_2 has negative imaginary part, then $\frac{z_1 + z_2}{z_1 - z_2}$ may be zero (b) real and positive rea negative (d) purely imaginary Watch Free Video Solution on Doubtnut
496	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If z_1, z_2 are complex number such that $\frac{2z_1}{3z_2}$ is purely imaginary number, then find $\left\|\frac{z_1 - z_2}{z_1 + z_2}\right\|$ Watch Free Video Solution on Doubtnut
497	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If $\cos\alpha + 2\cos\beta + 3\cos\gamma = \sin\alpha + 2\sin\beta + 3\sin\gamma = 0$, then the value of $\sin 3\alpha + 8\sin 3\beta + 27\sin$ sin(a+b+gamma) b. $3\sin(\alpha + \beta + \gamma)$ c. $18\sin(\alpha + \beta + \gamma)$ d. $\sin(\alpha + 2\beta + 3)$

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498	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If center of a regular hexagon is at the origin and one of the vertices on the Argand diagra $1+2i$, then its perimeter is $2\sqrt{5}$ b. $6\sqrt{2}$ c. $4\sqrt{5}$ d. $6\sqrt{5}$ ⊙ Watch Free Video Solution on Doubtnut
499	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z(1+a)=b+icanda^2+b^2+c^2=1,$ then $[(1+iz)/(1-iz)]=\frac{a+ib}{1+c}$ b. $\frac{b-ic}{1+a}$ c. $\frac{a+ic}{1+b}$ d. no these ⊙ Watch Free Video Solution on Doubtnut
500	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If z_1, z_2, z_3 are three complex, numbers and $A=\begin{bmatrix} argz_1 & argz_3 & argz_3 \\ argz_2 & argz_2 & argz_1 \\ argz_3 & argz_1 & argz_2 \end{bmatrix}$ Then A divisibl $arg\left(z_1+z_2+z_3\right)$ b. $arg\left(z_1, z_2, z_3\right)$ c. all numbers d. cannot say ⊙ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments

501	Let z, w be complex numbers such that $\bar{z} + i\bar{w} = 0$ and $argzw = \pi$ Then $argz$ equals Watch Free Video Solution on Doubtnut
502	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** For any two complex numbers z_1 and z_2, prove that $\left|z_1 + z_2\right| \leq \left|z_1\right| + \left|z_2\right|, \left|z_1 - z_2\right| \leq \left|z_1\right| +$ $\left|z + 1 + z_2\right| \geq \left|z_1\right| - \left|z_2\right|$ and $\left|z_1 - z_2\right| \geq \left|z_1\right| - \left|z_2\right|$ Watch Free Video Solution on Doubtnut
503	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $k > 0, \|z\| = w = k$, and $\alpha = \dfrac{z - \bar{w}}{k^2 + z\bar{w}}, then$Re(alpha)` Watch Free Video Solution on Doubtnut
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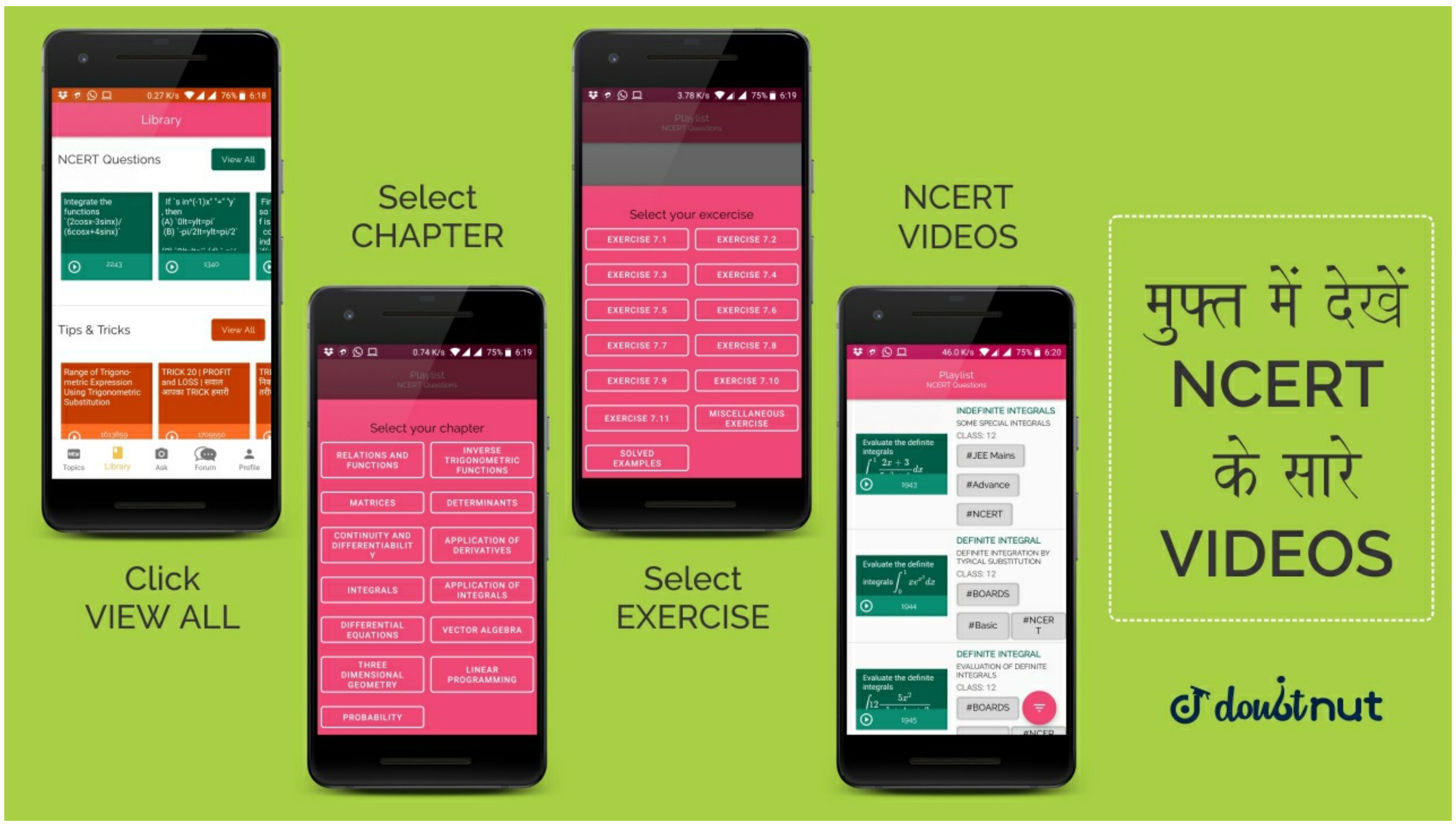
504	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z = x + iyandx^2 + y^2 = 16,$ then the range of $\|\|x\| - \|y\|\|$ is $[0, 4]$ b. $[0, 2]$ c. $[2, 4]$ d. none of th Watch Free Video Solution on Doubtnut
505	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $k + \left|k + z^2\right| = \|z\|^2\left(k \in R^-\right)$, then possible argument of z is Watch Free Video Solution on Doubtnut

506	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z = x + iy\left(x, y \in R, x \neq -\frac{1}{2}\right)$, the number of values of z satisfying $\lvert z\rvert^n = z^2\lvert z\rvert^{n-2} + z\lvert z\rvert^{n-2}$ $(n \in N, n > 1)$ is Watch Free Video Solution on Doubtnut
507	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $xandy$ are complex numbers, then the system of equations $(1 + i)x + (1 - i)y = 1, 2ix + 2y =$ has Unique solution No solution Infinite number of solutions None of these Watch Free Video Solution on Doubtnut
508	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Number of solutions of the equation $z^3 + \frac{3(\bar{z})^2}{\lvert z\rvert} = 0$ where z is a complex number is Watch Free Video Solution on Doubtnut
509	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Find the principal argument of the complex number $\frac{(1 + i)^5\left(1 + \sqrt{3i}\right)^2}{-1i\left(-\sqrt{3} + i\right)}$ Watch Free Video Solution on Doubtnut
	

510	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** The polynomial $x^6 + 4x^5 + 3x^4 + 2x^3 + x + 1$ is divisible by_______ where w is the cube ro units $x + \omega$ b. $x + \omega^2$ c. $(x + \omega)\left(x + \omega^2\right)$ d. $(x - \omega)\left(x - \omega^2\right)$ where ω is one of the imaginary roots of unity. Watch Free Video Solution on Doubtnut
511	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** $If(\cos\theta + i\sin\theta)(\cos 2\theta + i\sin 2\theta).... .(\cos n\theta + i\sin n\theta) = 1$ then the value of θ is: Watch Free Video Solution on Doubtnut
512	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Given $z = \left(1 + i\sqrt{3}\right)^{100}$, then $[Re(z)/Im(z)]$ equals (a)2^{100} b. 2^{50} c. $\frac{1}{\sqrt{3}}$ d. $\sqrt{3}$ Watch Free Video Solution on Doubtnut
513	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z = i^{i^i}$ where $i = \sqrt{-1}$ then $\|z\|$ is equal to Watch Free Video Solution on Doubtnut
514	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z = i\log\left(2 - \sqrt{3}\right), then\cos z = \ -1$ b. $-1/2$ c. 1 d. $1/2$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

515	If the equation $z^4 + a_1 z^3 + a_2 z^2 + a_3 z + a_4 = 0$ where a_1, a_2, a_3, a_4 are real coefficients diff from zero has a pure imaginary root then the expression $\frac{a_1}{a_1 a_2} + \frac{a_1 a_4}{a_2 a_3}$ has the value equal Watch Free Video Solution on Doubtnut
516	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Suppose A is a complex number and $n \in N$, such that $A^n = (A+1)^n = 1$, then the least val n is 3 b. 6 c. 9 d. 12 Watch Free Video Solution on Doubtnut
517	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** The number of complex numbers z such that $\|z\| = 1$ and $\left\|\frac{z}{\bar{z}} + \frac{\bar{z}}{z}\right\| = 1$ is $(arg(z) \in [0, 2\pi))$ th b. 6 c. 8 d. m or $ethan8$ Watch Free Video Solution on Doubtnut
518	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find the value of x such that $\frac{(x+\alpha)^n - (x+\beta)^n}{\alpha - \beta} = \frac{\sin(n\theta)}{\sin^n\theta}$, where α and β are the roots c equation $t^2 - 2t + 2 = 0$. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

519	Dividing $f(z)$ by $z - i$, we obtain the remainder i and dividing it by $z + i$, we get the remainde i, then remainder upon the division of $f(z)$ by $z^2 + 1$ is Watch Free Video Solution on Doubtnut
520	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z_1, z_2 \in C, z12 \in R, z_1(z12 - 3z22) = 2andz_2(3z12 - z22) = 11$, then the value of $z12 + z22$ is 12 c. 5 d. 8 Watch Free Video Solution on Doubtnut
521	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** $z_1 andz_2$ are two distinct points in an Argand plane. If $a\left\|z_1\right\| = b\left\|z_2\right\|(wherea, b \in R)$, then the $\left(az_1 / bz_2\right) + \left(bz_2 / az_1\right)$ is a point on the line segment [-2, 2] of the real axis line segment [of the imaginary axis unit circle $\|z\| = 1$ the line with $argz = \tan^{-1}2$ Watch Free Video Solution on Doubtnut
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522	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $x^2 + x + 1 = 0$ then the value of $\left(x + \frac{1}{x}\right)^2 + \left(x^2 + \frac{1}{x^2}\right)^2 + \ldots + \left(x^{27} + \frac{1}{x^{27}}\right)^2$ is Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity

523	If ω is a complex nth root of unity, then $\sum_{r=1}^{n} (a+b)\omega^{r-1}$ is equal to $\frac{n(n+1)a}{2}$ b. $\frac{nb}{1+n}$ c. $\frac{n\ldots}{\omega\ldots}$ none of these Watch Free Video Solution on Doubtnut
524	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The roots of the cubic equation (z + α β)^3 = α^3 , α is not equal to 0, represent the vertice triangle of sides of length Watch Free Video Solution on Doubtnut
525	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** The common roots of the equation $Z^3 + 2Z^2 + 2Z + 1 = 0$ and $Z^{1985} + Z^{100} + 1 = 0$ are Watch Free Video Solution on Doubtnut
526	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $\left\lvert \frac{z_1}{z_2} \right\rvert = 1$ and $arg\left(z_1 z_2\right) = 0$, then Watch Free Video Solution on Doubtnut
527	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $z_1 and z_2$ are the complex roots of the equation $(x-3)^3 + 1 = 0, then z_1 + z_2$ equal to 1 b. 3 c 7 Watch Free Video Solution on Doubtnut

<table>
<tr><td></td><td>
</td></tr>
<tr><td>528</td><td>CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Cube Roots Of Unity

Which of the following is equal to -13 ? $\frac{\sqrt{3}+\sqrt{-1}}{2}$ b. $\frac{-\sqrt{3}+\sqrt{-1}}{\sqrt{-4}}$ c. $\frac{\sqrt{3}-\sqrt{-1}}{\sqrt{-4}}$ d. $-\sqrt{-1}$

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<tr><td>529</td><td>CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Properties Of Modulus

If $|z-1| \le 2and\left|\omega z-1-\omega^2\right| = a$ where ω is cube root of unity , then complete set of values o
$0 \le a \le 2$ b. $\frac{1}{2} \le a \le \frac{\sqrt{3}}{2}$ c. $\frac{\sqrt{3}}{2}-\frac{1}{2} \le a \le \frac{1}{2}+\frac{\sqrt{3}}{2}$ d. $0 \le a \le 4$

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<tr><td>530</td><td>CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Properties Of Modulus

If $\left|z^2-3\right| = 3|z|$, then the maximum value of $|z|$ is a.1 b. $\frac{3+\sqrt{21}}{2}$ c. $\frac{\sqrt{21}-3}{2}$ d. none of these

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<tr><td>531</td><td>CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR
EQUATIONS_Properties Of Modulus

If $|2z-1| = |z-2|andz_1, z_2, z_3$ are complex numbers such that $\left|z_1-\alpha\right| < \alpha, \left|z_2-\beta\right| < \beta,$ th
$\left|\frac{z_1+z_2}{\alpha+\beta}\right|$a) $< |z|$b. $< 2|z|c.$ $> |z|$ d. $> 2|z|$</td></tr>
</table>

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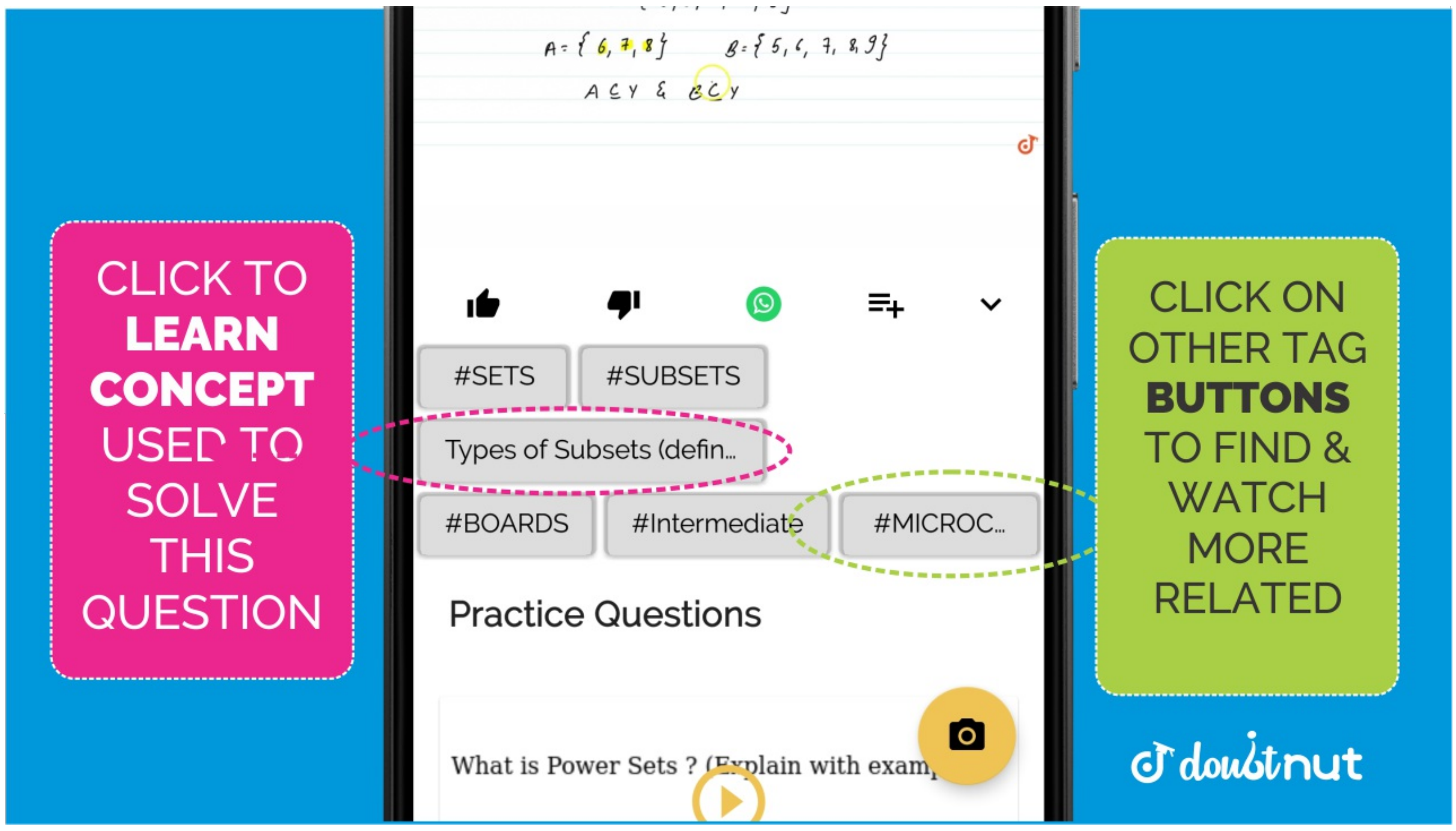
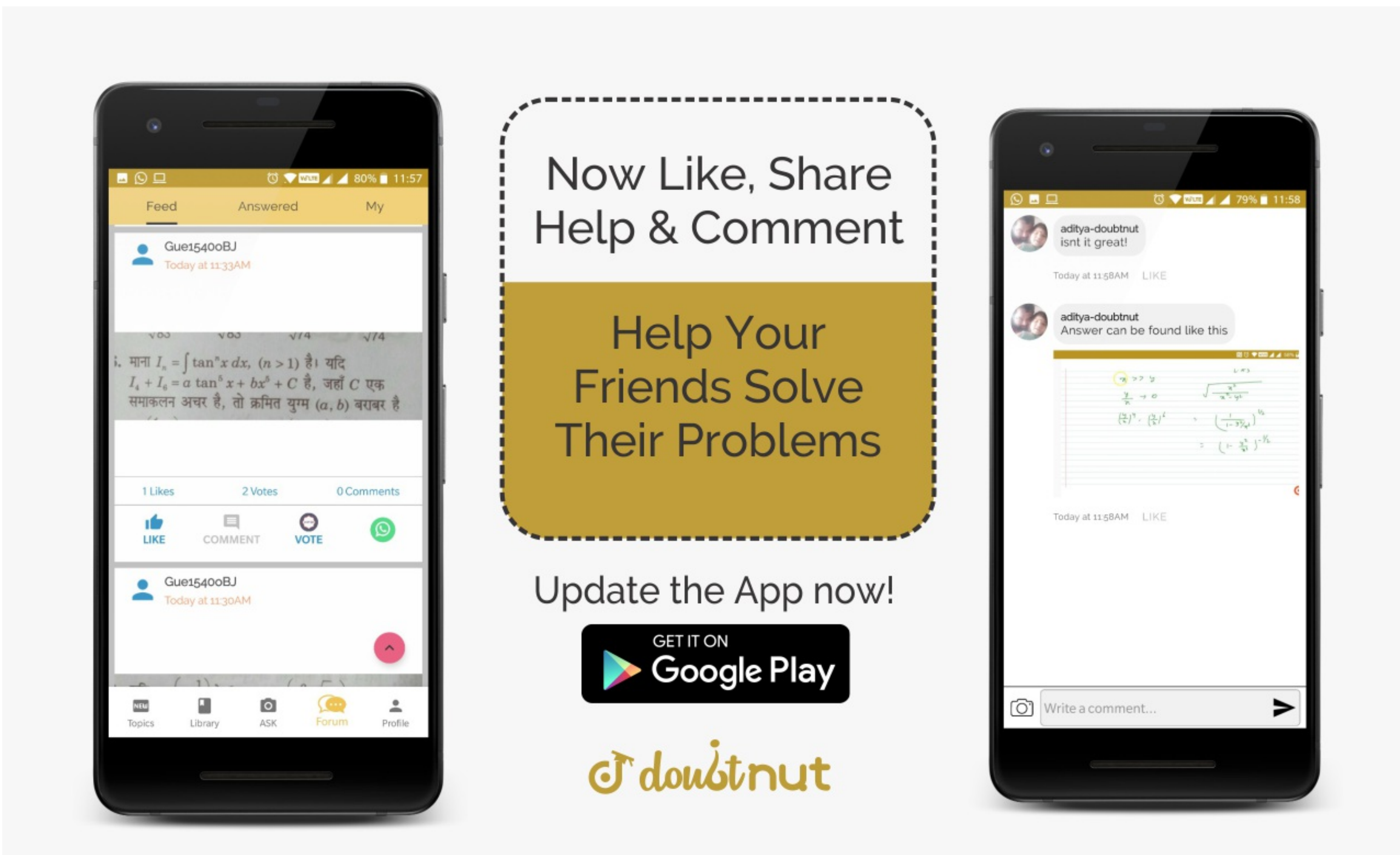
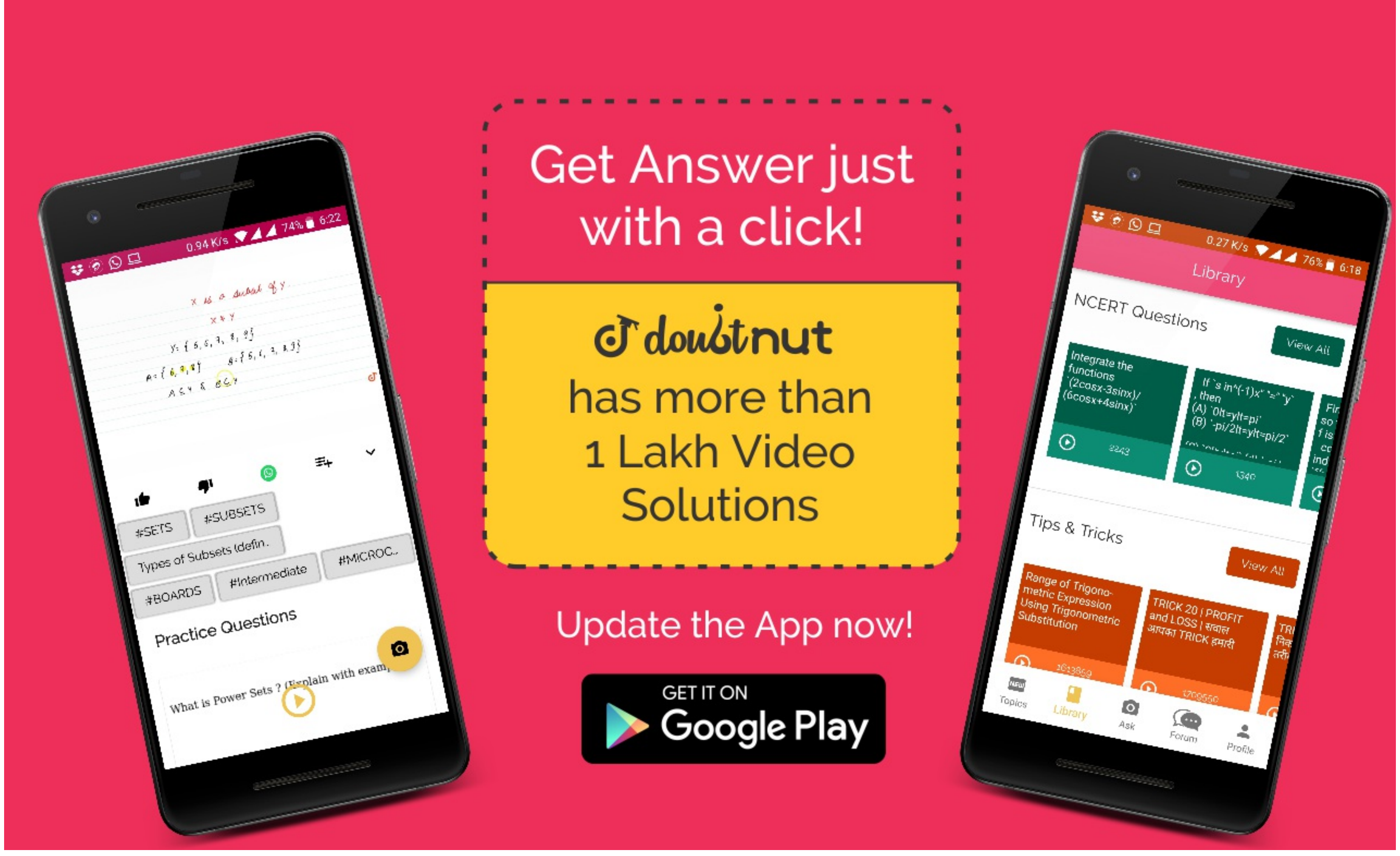
532	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If z_1 is a root of the equation $a_0z^n + a_1z^{n-1} + ... + a_{n-1}z + a_n = 3, where\left\|a_i\right\| < 2$ $i = 0, 1, ..., n, then$ a.$\|z\| = \frac{3}{2}$ b. $\|z\| < \frac{1}{4}$ c.$\|z\| > \frac{1}{4}$ d. $\|z\| < \frac{1}{3}$ ⦿ Watch Free Video Solution on Doubtnut
533	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $8iz^3 + 12z^2 - 18z + 27i = 0, then\ \|z\| = \frac{3}{2}$ b. $\|z\| = \frac{2}{3}$ c.$\|z\| = 1$ d. $\|z\| = \frac{3}{4}$ ⦿ Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
534	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If `|z|< ⦿ Watch Free Video Solution on Doubtnut
535	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Consider the given equation $11z^{10} + 10iz^9 + 10iz - 11 = 0$, then |z| is ⦿ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane

536	If $\left\|z^2 - 1\right\| = \|z\|^2 + 1$, then z lies on (a) a circle (b) the imaginary axis (c) the real axis (d) an e Watch Free Video Solution on Doubtnut
537	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $\|z\| = 1$, then the point representing the complex number $-1 + 3z$ will lie on a. a circle parabola c. a straight line d. a hyperbola Watch Free Video Solution on Doubtnut
538	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $z = (\lambda + 3) + i\sqrt{5 - \lambda^2}$ then the locus of Z is Watch Free Video Solution on Doubtnut
539	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** $A\left(z_1\right), B\left(z_2\right), C\left(z_3\right)$ are the vertices of he triangle ABC (in anticlockwise). If $\angle ABC = \pi/4$ $AB = \sqrt{2}(BC)$, then prove that $z_2 = z_3 + i\left(z_1 - z_3\right)$. Watch Free Video Solution on Doubtnut
	
540	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If z_1, z_2 and z_3, are the vertices of an equilateral triangle ABC such that $\left\|z_1 - i\right\| = \left\|z_2 - i\right\| =$

	.then $\left\|z_1+z_2+z_3\right\|$ equals: Watch Free Video Solution on Doubtnut
541	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** The greatest positive argument of complex number satisfying $\|z-4\|=Re(z)$ is $\frac{\pi}{3}$ b. $\frac{2\pi}{3}$ c. $\frac{\pi}{2}$ c Watch Free Video Solution on Doubtnut
542	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The complex number associated with the vertices A, B, C of ΔABC are $e^{i\theta}, \omega, \bar{\omega}$, respecti where $\omega, \bar{\omega}$ are the com plex cube roots of unity and $\cos\theta > Re(\omega)$], then the complex numb the point where angle bisector of A meets cumcircle of the triangle, is Watch Free Video Solution on Doubtnut
543	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The maximum area of the triangle formed by the complex coordinates z, z_1, z_2 which satis relations $\left\|z-z_1\right\| = \left\|z-z_2\right\|$ and $\left\|z-\frac{z_1+z_2}{2}\right\| \leq r$,where $r > \left\|z_1-z_2\right\|$ is Watch Free Video Solution on Doubtnut
544	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If z is complex number, then the locus of z satisfying the condition $\|2z-1\| = \|z-$ (a)perpendicular bisector of line segment joining 1/2 and 1 (b)circle (c)parabola (d)none above curves Watch Free Video Solution on Doubtnut
545	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $\left\|z_2+iz_1\right\| = \left\|z_1\right\| + \left\|z_2\right\| and \left\|z_1\right\| = 3 and \left\|z_2\right\| = 4$, then the area of $\triangle ABC$, if affixe $A, B, and C are z_1, z_2, and \left[\frac{z_2-iz_1}{1-i}\right]$ respectively, is $\frac{5}{2}$ b. 0 c. $\frac{25}{2}$ d. $\frac{25}{4}$ Watch Free Video Solution on Doubtnut

	
546	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If t and c are two complex numbers such that $\|t\| \neq \|c\|, \|t\| = 1 and z = \dfrac{at+b}{t-c}, z = x + iy$. Locus c (where a, b are complex numbers) a. line segment b. straight line c. circle d. none of these Watch Free Video Solution on Doubtnut
547	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** The number of complex numbers z satisfying $\|z-3-i\| = \|z-9-i\| and \|z-3+3i\| = 3$ are a. o two c. four d. none of these Watch Free Video Solution on Doubtnut
548	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Lt a be a complex number such that $\|a\| < 1 and z_1, z_2 z_,$ be the vertices of a polygon such $z_k = 1 + a + a^2 + \ldots + a^{k-1}$ for all $k = 1, 2, 3, Then z_1, z_2$ lie within the circle (a) $\left\|z - \dfrac{1}{1-a}\right\| = \dfrac{1}{\|a -}$ $\left\|z + \dfrac{1}{a+1}\right\| = \dfrac{1}{\|a+1\|}$ (c) $\left\|z - \dfrac{1}{1-a}\right\| = \|a-1\|$ (d) $\left\|z + \dfrac{1}{a+1}\right\| = \|a+1\|$ Watch Free Video Solution on Doubtnut
549	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let $\lambda \in R$. If the origin and the non-real roots of $2z^2 + 2z + \lambda = 0$ form the three vertices equilateral triangle in the Argand lane, then λ is 1 b. $\dfrac{2}{3}$ c. 2 d. -1

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550	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Let $z = 1 - t + i\sqrt{t^2 + t + 2}$, where t is a real parameter. Watch Free Video Solution on Doubtnut
551	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $z^2 + z\|z\| + \left\|z^2\right\| = 0,$ then the locus z is a. a circle b. a straight line c. a pair of straight li none of these Watch Free Video Solution on Doubtnut
552	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The roots of the equation $t^3 + 3at^2 + 3bt + c = 0 are z_1, z_2, z_3$ which represent the vertices equilateral triangle. Then $a^2 = 3b$ b. $b^2 = a$ c. $a^2 = b$ d. $b^2 = 3a$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments

553	If 'z, lies on the circle $\|z - 2i\| = 2\sqrt{2}$, then the value of $arg\left(\frac{z - 2}{z + 2}\right)$ is the equal to Watch Free Video Solution on Doubtnut
554	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** P(z) be a variable point in the Argand plane such that $\|z\|$=minimum $\{\|z - 1, \ \|z + 1\ \| \ \}$, then will be equal to a. -1 or 1 b. 1 but not equal to-1 c. -1 but not equal d. none of these Watch Free Video Solution on Doubtnut
555	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** The locus of point z satisfying $Re\left(\frac{1}{z}\right) = k, wherek$ is a nonzero real number, is a. a straigh b. a circle c. an ellipse d. a hyperbola Watch Free Video Solution on Doubtnut
556	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $\left\|z_1\right\| = \left\|z_2\right\| = \left\|z_3\right\| = 1$ and $z_1 + z_2 + z_3 = 0$ then the area of the triangle whose vertices z_1, z_2, z_3 is $3\sqrt{3}/4$ b. $\sqrt{3}/4$ c. 1 d. 2 Watch Free Video Solution on Doubtnut
557	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** z_1, z_2, z_3, z_4 are distinct complex numbers representing the vertices of a quadrilateral taken in order. If $z_1 - z_4 = z_2 - z_3 and a r g\left[\left(z_4 - z_1\right)/\left(z_2 - z_1\right)\right] = \pi/2$, the quadrilateral rectangle b. rhombus c. square d. trapezium Watch Free Video Solution on Doubtnut
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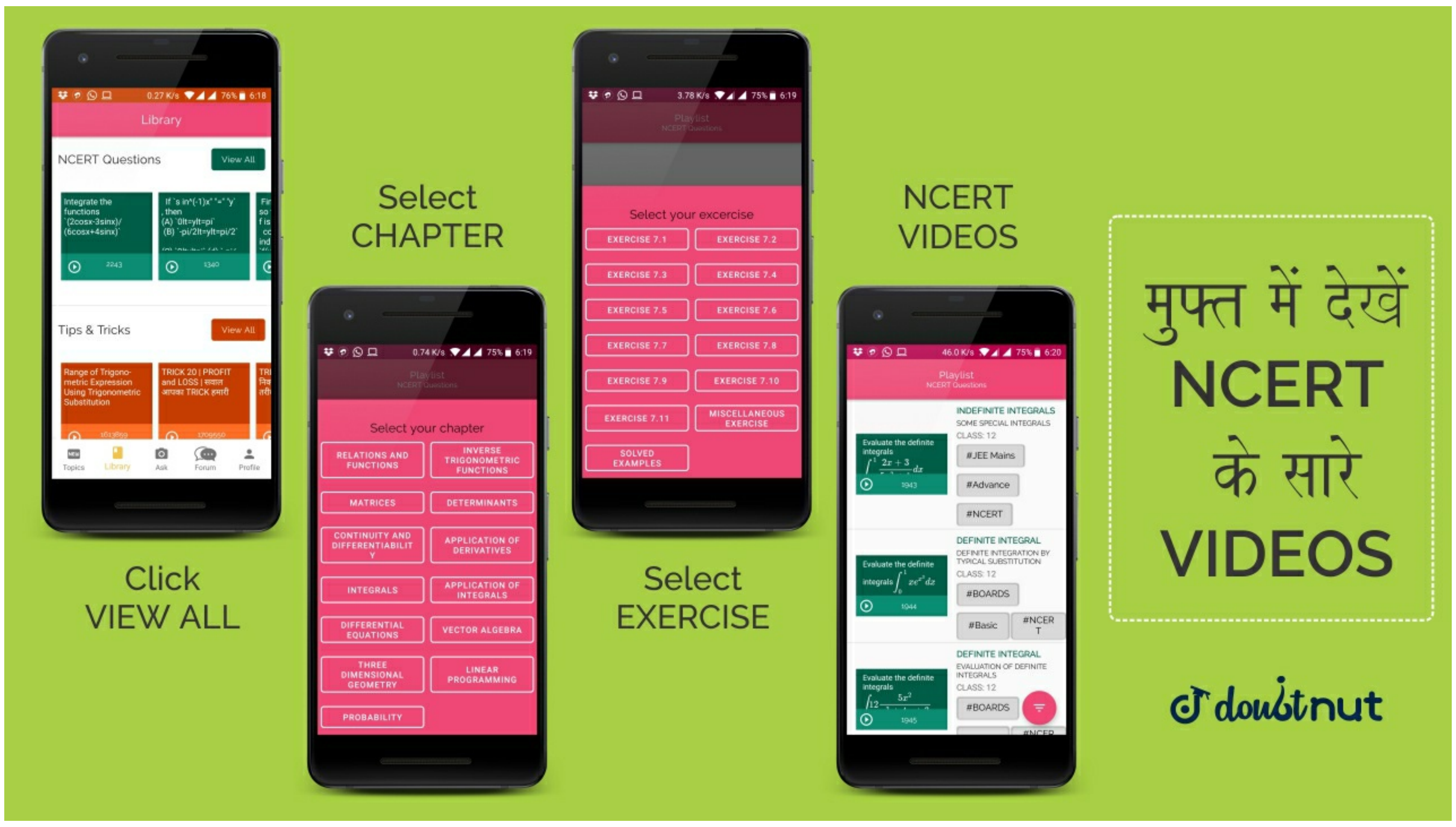
558	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $z = \frac{\left(1 + i\sqrt{3}\right)^2}{4i\left(1 - i\sqrt{3}\right)} isacomplexvmber, then\ arg(z) = \frac{\pi}{4}$ (b) $arg(z) = \frac{\pi}{2}$ $\lvert z\rvert = \frac{1}{2}$ (d) $\lvert z\rvert = 2$ Watch Free Video Solution on Doubtnut
559	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The point $z_1 = 3 + \sqrt{3}i$ and $z_2 = 2\sqrt{3} + 6i$ are given on la complex plane. The complex nu lying on the bisector of the angel formed by the vectors $z_1 and z_2$ is $z = \frac{\left(3 + 2\sqrt{3}\right)}{2} + \sqrt{3}$ $z = 5 + 5i$ $z = -1 - i$ none of these Watch Free Video Solution on Doubtnut
560	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Let $C_1$and C_2 be two circles with C_2 lying inside C_1 circle C lying inside C_1 touches C_1 inte andexternally. Identify the locus of the centre of C Watch Free Video Solution on Doubtnut
561	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $\lvert z - 2 - i\rvert = \lvert z\rvert\sin\left(\frac{\pi}{4} - argz\right)\rvert$, where $i = \sqrt{-1}$,then locus of z, is Watch Free Video Solution on Doubtnut

562	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $z = \dfrac{3}{2 + \cos\theta + i\sin\theta}$ then locus of z is straight line a circle having center on the y-a parabola a circle having center on the x-axis Watch Free Video Solution on Doubtnut
563	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $pandq$ are distinct prime numbers, then the number of distinct imaginary numbers whic pth as well as qth roots of unity are. a. $\min(p, q)$ b. $\min(p, q)$ c. 1 d. $zero$ Watch Free Video Solution on Doubtnut
	
564	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If α is the nth root of unity, then $1 + 2\alpha + 3\alpha^2 + \rightarrow n$ terms equal to a. $\dfrac{-n}{(1-\alpha)^2}$ b. $\dfrac{-n}{1-\alpha^2}$ c. $\dfrac{-}{1}$ $\dfrac{-2n}{(1-\alpha)^2}$ Watch Free Video Solution on Doubtnut
565	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_De Moivres Theorem** Given z is a complex number with modulus 1. Then the equation $\left[\dfrac{1+ia}{1-ia}\right]^4 = z$ has all real and distinct two real and two imaginary three roots two imaginary one root real and imaginary Watch Free Video Solution on Doubtnut

566	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Roots of the equation are $(z+1)^5=(z-1)^5$ are (a) $\pm i\tan\left(\frac{\pi}{5}\right), \pm i\tan\left(\frac{2\pi}{5}\right)$ $\pm i\cot\left(\frac{\pi}{5}\right), \pm i\cot\left(\frac{2\pi}{5}\right)$ (c)$\pm i\cot\left(\frac{\pi}{5}\right), \pm i\tan\left(\frac{2\pi}{5}\right)$ (d)none of these Watch Free Video Solution on Doubtnut
567	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** The value of z satisfying the equation $\log z + \log z^2 + \dot{} + \log z^n = 0 is \frac{\cos(4m\pi)}{n(n+1)} + i\frac{\sin(4m\pi)}{n(n+1)}, m$ $\frac{\cos(4m\pi)}{n(n+1)} - i\frac{\sin(4m\pi)}{n(n+1)}, m=12$ $\frac{\sin(4m\pi)}{n(n+1)} + i\frac{\sin(4m\pi)}{n(n+1)}, m=12$ 0 Watch Free Video Solution on Doubtnut
568	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $n \in N > 1$, then the sum of real part of roots of $z^n=(z+1)^n$ is equal to $\frac{n}{2}$ b. $\frac{(n-1)}{2}$ c. $\frac{(1-n)}{2}$ Watch Free Video Solution on Doubtnut
569	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Which of the following represents a points in an Argand pane, equidistant from the roots o equation $(z+1)^4=16z^4$? $(0,0)$ b. $\left(-\frac{1}{3},0\right)$ c. $\left(\frac{1}{3},0\right)$ d. $\left(0,\frac{2}{\sqrt{5}}\right)$ Watch Free Video Solution on Doubtnut
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570	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $,Z_1,Z_2,Z_3,\ldots\ldots.Z_{n-1}$ are n^{th} roots of unity then the value $\frac{1}{3-Z_1}+\frac{1}{3-Z_2}+\ldots\ldots\ldots+\frac{1}{3-Z_{n-1}}$ is equal to Watch Free Video Solution on Doubtnut
571	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $z=\omega,\omega^2 where\omega$ is a non-real complex cube root of unity, are two vertices of an equila triangle in the Argand plane, then the third vertex may be represented by $z=1$ b. $z=$ $z=-2$ d. $z=-1$ Watch Free Video Solution on Doubtnut
572	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** $P(z_1),Q(z_2),R(z_3)andS(z_4)$ are four complex numbers representing the vertices of a rhor taken in order on the complex lane, then which one of the following is/ are correct? $\frac{z_1-}{z_2-}$ purely real $amp\frac{z_1-z_4}{z_2-z_3}=amp\frac{z_2-z_4}{z_3-z_4}$ $\frac{z_1-z_3}{z_2-z_4}$ is purely imaginary It is not necessary $\|z_1-z_3\|\neq\|z_2-z_4\|$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers If $z^3+3+2i(z+(-1+ia)=0$ has on ereal roots, then the value of a lies in the interval $(a$

573	$(-2, 1)$ b. $(-1, 0)$ c. $(0, 1)$ d. $(-2, 3)$ Watch Free Video Solution on Doubtnut
574	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** A rectangle of maximum area is inscribed in the circle $\lvert z-3-4i\rvert = 1$. If one vertex c rectangle is $4+4i$, then another adjacent vertex of this rectangle can be $2+4i$ b. $3+5i$ c. d. $3-3i$ Watch Free Video Solution on Doubtnut
575	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $\lvert z_1\rvert = 15adn\lvert z_2-3-4i\rvert = 5, then$ a. $\left(\lvert z_1-z_2\rvert\right)_{\min} = 5$ b. $\left(\lvert z_1-z_2\rvert\right)_{\min} = 10$ $\left(\lvert z_1-z_2\rvert\right)_{max} = 20$ d. $\left(\lvert z_1-z_2\rvert\right)_{max} = 25$ Watch Free Video Solution on Doubtnut
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576	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If the points $A(z), B(-z), andC(1-z)$ are the vertices of an equilateral triangle ABC, then (a of possible z is $\frac{1}{2}$ (b)sum of possible z is 1 (c)product of possible z is $\frac{1}{4}$ (d)product of poss is $\frac{1}{2}$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments

577	if $arg(z+a)=\frac{\pi}{6}$ and $arg(z-a)=\frac{2\pi}{3}$ then Watch Free Video Solution on Doubtnut
578	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** Values $(s)(-i)^{\frac{1}{3}}$ is/are $\frac{\sqrt{3}-i}{2}$ b. $\frac{\sqrt{3}+i}{2}$ c. $\frac{-\sqrt{3}-i}{2}$ d. $\frac{-\sqrt{3}+i}{2}$ Watch Free Video Solution on Doubtnut
579	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $1, z_1, z_2, z_3, \ldots\ldots, z_{n-1}$ be the n, nth roots of unity and ω be a non-real complex cube ro unity, then $\prod_{r=1}^{n-1}\left(\omega-z_r\right)$ can be equal to Watch Free Video Solution on Doubtnut
580	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If the equation $z^3+(3+l)^{z^2}-32-(m+l)=0,\ m\in R$, has at least one real root, then su possible values of m, is Watch Free Video Solution on Doubtnut
581	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Let P(x) and Q(x) be two polynomials. If $f(x)=P\left(x^4\right)+xQ\left(x^4\right)$ is divisible by x^2+1, then Watch Free Video Solution on Doubtnut
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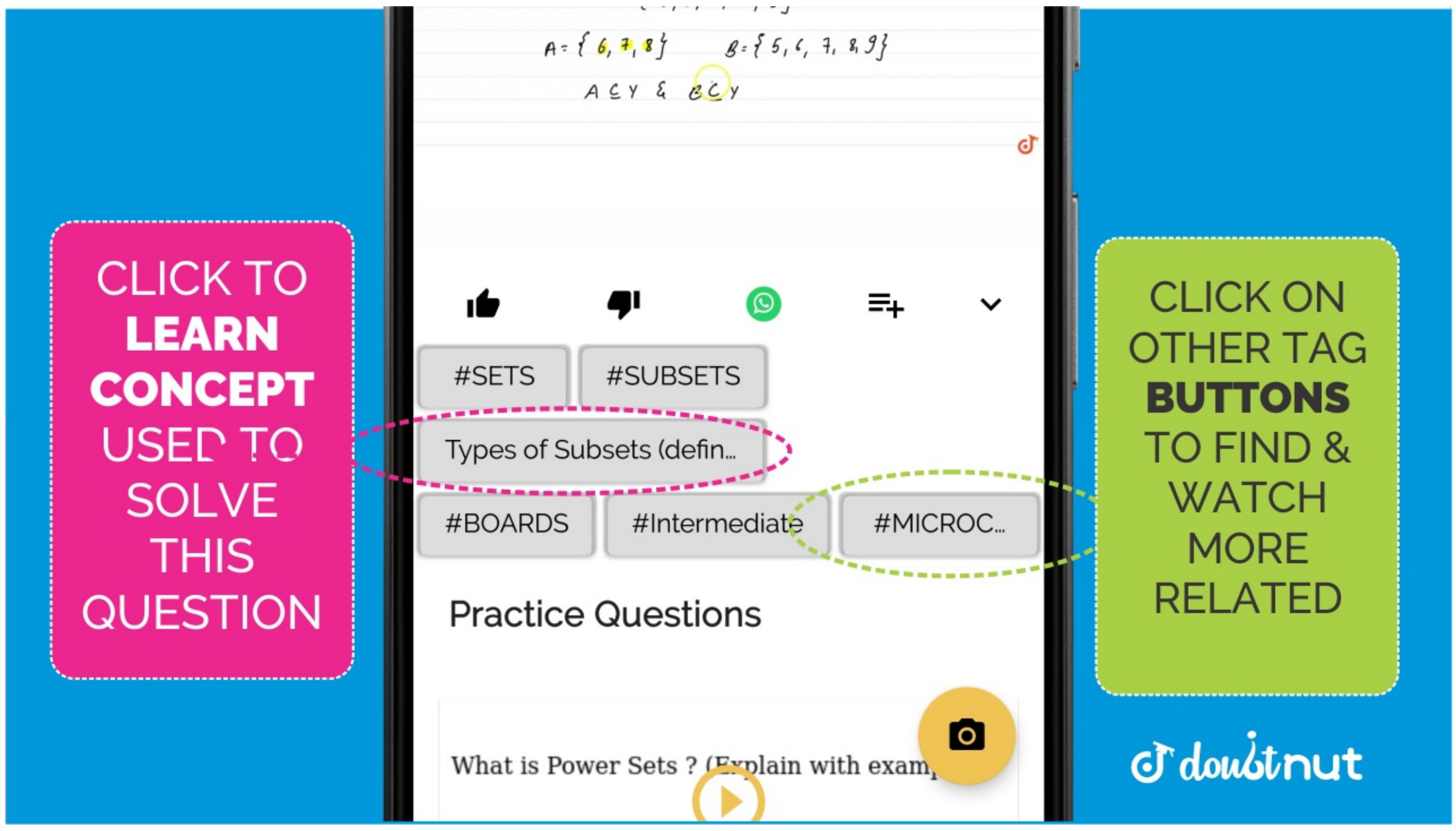
582	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $amp\left(z_1z_2\right) = 0 and\left|z_1\right| = \left|z_2\right| = 1, then\ z_1 + z_2 = 0$ b. $z_1z_2 = 1$ c. $z_1 = z_2$ d. none of these Watch Free Video Solution on Doubtnut
583	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\left\|z - \left(\frac{1}{z}\right)\right\| = 1,$ then $(\|z\|)_{max} = \frac{1+\sqrt{5}}{2}$ b. $(\|z\|)_{m\in} = \frac{\sqrt{5}-1}{2}$ c. $(\|z\|)_{max} = \frac{\sqrt{5}-2}{2}$ d. $(\|z\|)_{m\in} = \sqrt{}$ Watch Free Video Solution on Doubtnut
584	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** z_0 is root of the equation $z^n\cos\theta^0 + z^{n-1}\cos\theta_1 + + z\cos\theta_{n-1} + \cos\theta_n = 2, where\theta_i \in R,$ $\left(\left\|z_0\right\|\right)_> 1$ b. $\left(\left\|z_0\right\|\right)_> \frac{1}{2}$ c. $\left(\left\|z_0\right\|\right)_> \frac{1}{4}$ d. $\left(\left\|z_0\right\|\right)_> \frac{3}{2}$ Watch Free Video Solution on Doubtnut
585	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If from a point P representing the complex number z_1 on the curve $\|z\| = 2,$ two tangent drawn from P to the curve $\|z\| = 1,$ meeting at points $Q\left(z_2\right)$ and $R\left(z_3\right),$ then : Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

586	A complex number z is rotated in anticlockwise direction by an angle α and we get z' and same complex number z is rotated by an angle α in clockwise direction and we get z'' then Watch Free Video Solution on Doubtnut
587	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Let z be a complex number satisfying equation $z^p - z^{-q}, where p, q \in N, then$ if $p = q$, number of solutions of equation will be infinite. if $p = q$, then number of solutions of equ will be finite. if $p \neq q$, then number of solutions of equation will be $p + q + 1$. if $p \neq q$, number of solutions of equation will be $p + q$. Watch Free Video Solution on Doubtnut
	
588	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $z_1 = 5 + 12i and \|z_2\| = 4, then$ (a)maximum $(\|z_1 + iz_2\|) = 17$ (b)mini $(\|z_1 + (1 + i)z_2\|) = 13 + 4\sqrt{2}$ (c)minimum $\left\|\frac{z_1}{z_2 + \frac{4}{z_2}}\right\| = \frac{13}{4}$ (d)maximum $\left\|\frac{z_1}{z_2 + \frac{4}{z_2}}\right\| = \frac{13}{3}$ Watch Free Video Solution on Doubtnut
589	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Write a linear equation representing a line which is parallel to y-axis and is at a distance units on the positive side of x-axis Watch Free Video Solution on Doubtnut

590	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $z = x + iy$, then he equation $\left\vert \frac{2z - i}{z + 1} \right\vert = m$ represents a circle, then m can be $\frac{1}{2}$ b. 1 c. 2 d. Watch Free Video Solution on Doubtnut
591	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Given that the two curves $arg(z) = \frac{\pi}{6} and \left\vert z - 2\sqrt{3}i \right\vert = r$ intersect in two distinct points, then [b. `0 Watch Free Video Solution on Doubtnut
592	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $PandQ$ are represented by the complex numbers $z_1 and z_2$ such that $\left\vert \frac{1}{z_2} + \frac{1}{z_1} \right\vert = \left\vert \frac{1}{z_2} -$ then $OPQ(whereO)$ is the origin is equilateral OPQ is right angled. the circumcente $OPQis\frac{1}{2}\left(z_1 + z_2\right)$ the circumcenter of $OPQis\frac{1}{3}\left(z_1 + z_2\right)$ Watch Free Video Solution on Doubtnut
593	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** Given $z = f(x) + ig(x) where f, g : (0, 1) \overrightarrow{0, 1}$ are real valued functions. Then which of the follo does not hold good? $z = \frac{1}{1 - ix} + i\frac{1}{1 + ix}$ b. $z = \frac{1}{1 + ix} + i\frac{1}{1 - ix}$ c. $z = \frac{1}{1 + ix} + i\frac{1}{1 + i}$ $z = \frac{1}{1 - ix} + i\frac{1}{1 - ix}$ Watch Free Video Solution on Doubtnut
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594	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Given that the complex numbers which satisfy the equation $\left\|z\bar{z}^3\right\| + \left\|\bar{z}z^3\right\| = 350$ form a rect in the Argand plane with the length of its diagonal having an integral number of units, then of rectangle is 48 sq. units if z_1, z_2, z_3, z_4 are vertices of rectangle, then $z_1 + z_2 + z_3 + z$ rectangle is symmetrical about the real axis $arg\left(z_1 - z_3\right) = \frac{\pi}{4}$ or $\frac{3\pi}{4}$ Watch Free Video Solution on Doubtnut
595	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Equation of tangent drawn to circle $\|z\| = r$ at the point $A\left(z_0\right)$, is Watch Free Video Solution on Doubtnut
596	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $z_1 and z_2$ are two complex numbers such that $\left\|z_1\right\| = z_2 \mid and arg\left(z_1\right) + arg\left(z_2\right) = \pi$, then that $z_1, \ = \ - (z)_2.$ Watch Free Video Solution on Doubtnut
597	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** Locus of complex number satisfying $arg\left[\frac{z - 5 + 4i}{z + 3 - 2i}\right] = \frac{\pi}{4}$ is the arc of a circle whose radi $5\sqrt{2}$ whose radius is 5 whose length (of arc) is $\frac{15\pi}{\sqrt{2}}$ whose centre is $-2 - 5i$

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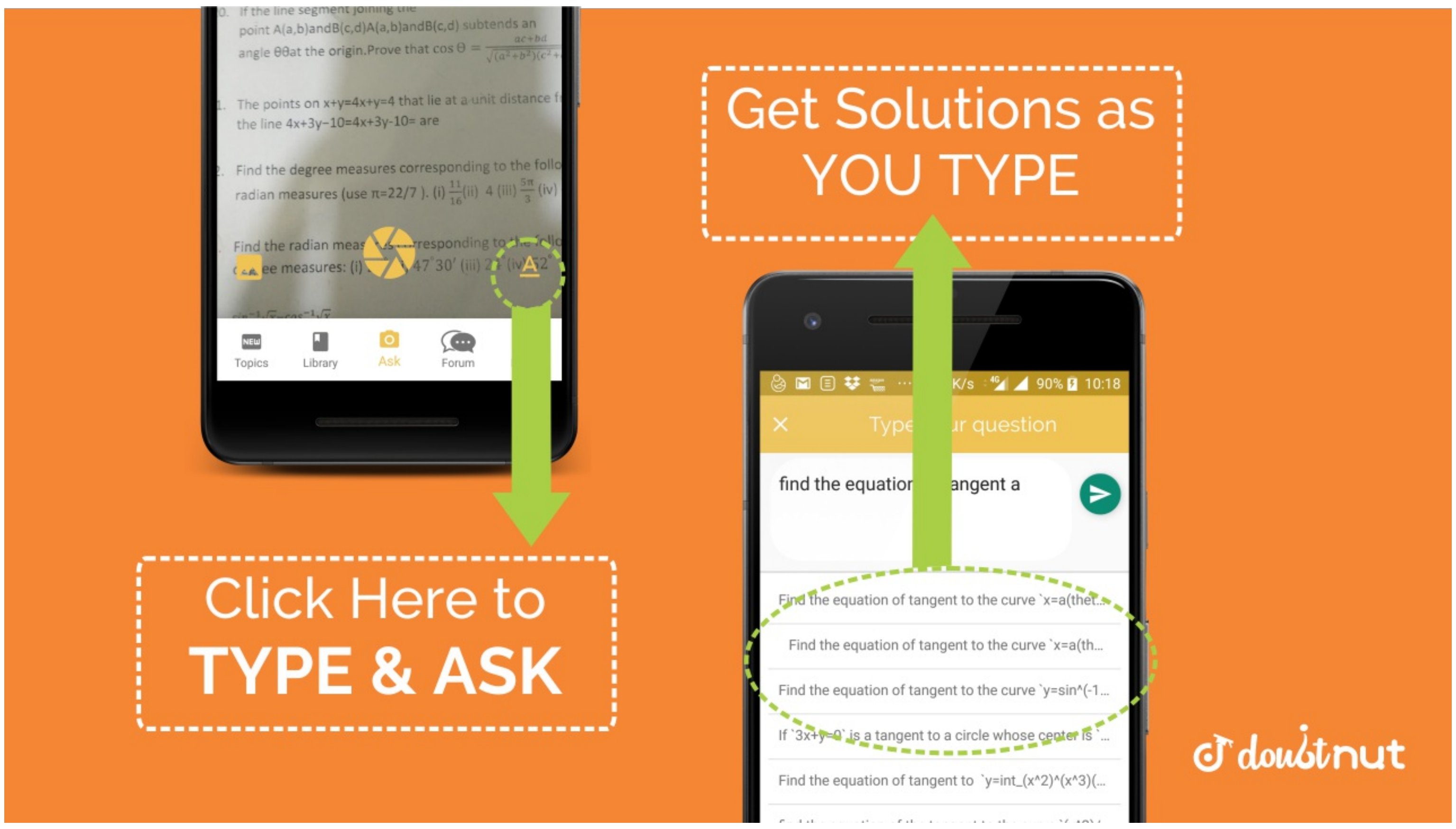
598	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If α is a complex constant such that $\alpha z^2 + z + \bar{\alpha} = 0$ has a real root, then (a) $\alpha + \bar{\alpha} =$ $\alpha + \bar{\alpha} = 0$ (c)$\alpha + \bar{\alpha} = -1$ (d)the absolute value of the real root is 1 Watch Free Video Solution on Doubtnut
599	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $\sqrt{5-12i} + \sqrt{-5-12i} = z$, then principal value of $argz$ can be $\frac{\pi}{4}$ b. $\frac{\pi}{4}$ c. $\frac{3\pi}{4}$ d. $-\frac{3\pi}{4}$ Watch Free Video Solution on Doubtnut
600	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If $\lvert z + \bar{z} \rvert + \lvert z - \bar{z} \rvert = 2$ then z lies on (a) a straight line (b) a set of four lines (c) a circle (d) No these Watch Free Video Solution on Doubtnut

601	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $x = a + bi$ is a complex number such that $x^2 = 3 + 4i$ and $x^3 = 2 + 11i$, where $i = \sqrt{-1}$, $(a + b)$ equal to Watch Free Video Solution on Doubtnut
602	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** If the complex numbers $xandy$ satisfy $x^3 - y^3 = 98iandx - y = 7i, thenxy = a + ib, wherea, b,$ The value of $(a + b)/3$ equals _______. Watch Free Video Solution on Doubtnut
603	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** If $x = \omega - \omega^2 - 2$ then , the value of $x^4 + 3x^3 + 2x^2 - 11x - 6$ is (where ω is a imaginary cube r unity) Watch Free Video Solution on Doubtnut
604	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Let $z = 9 + bi, whereb$ is nonzero real and $i^2 = -1$. If the imaginary part of z^2andz^3 are e then $\frac{b}{3}$ is _______. Watch Free Video Solution on Doubtnut
605	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Modulus of nonzero complex number z satisfying $\bar{z} + z = 0$ and $\|z\|^2 - 4zi = z^2$ is __________. Watch Free Video Solution on Doubtnut

606	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If the expression $(1+ir)^3$ is of the form of $s(1+i)$ for some real 's' where 'r' is also real $i=\sqrt{-1}$ Watch Free Video Solution on Doubtnut
607	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If complex number $z(z \neq 2)$ satisfies the equation $z^2 = 4z + \|z\|^2 + \frac{16}{\|z\|^3}$,then the value c is______. Watch Free Video Solution on Doubtnut
608	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** The complex number z satisfies $z + \|z\| = 2 + 8i$. find the value of $\|z\| - 8$ Watch Free Video Solution on Doubtnut
609	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $\|z\| = 2 and w - \frac{z+1}{z-1}, where z, w, \in C$ (where C is the set of complex numbers). Then prod least and greatest value of modulus of w is__________. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

610	$\frac{(\cos\theta + i\sin\theta)^4}{(\sin\theta + i\cos\theta)^5}$ is equal to. Watch Free Video Solution on Doubtnut
611	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If z is a complex number satisfying $z^4 + z^3 + 2z^2 + z + 1 = 0$ then the set of possible values c Watch Free Video Solution on Doubtnut
	
612	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** Let $1, w, w^2$ be the cube root of unity. The least possible degree of a polynomial with coefficients having roots $2w, (2 + 3w), \left(2 + 3w^2\right), \left(2 - w - w^2\right)$ is _____________. Watch Free Video Solution on Doubtnut
613	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** If ω is an imaginary cube root of unity, then $\left(1 + \omega - \omega^2\right)^7$ is equal to 128ω (b) -128ω 128ω $-128\omega^2$ Watch Free Video Solution on Doubtnut
614	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Suppose that z is a complex number the satisfies $\|z - 2 - 2i\| \leq 1$. The maximum value of $\|2i$ is equal to _______. Watch Free Video Solution on Doubtnut

615	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If the maximum value of $\|3z+9-7i\|$ if $\|z+2-i\|=5$ is 5K, then find k Watch Free Video Solution on Doubtnut
616	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Let $Z_1=(8+i)\sin\theta+(7+4i)\cos\theta$ and $Z_2=(1+8i)\sin\theta+(4+7i)\cos\theta$ are two complex numb $Z_1\cdot Z_2=a+ib$ where $a,b\in R$ then the largest value of $(a+b)\forall\theta\in R$, is Watch Free Video Solution on Doubtnut
617	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Let $A=\{a\in R\}$ the equation $(1+2i)x^3-2(3+i)x^2+(5-4i)x+a^2=0$ has at least one real Then the value of $\frac{\sum a^2}{2}$ is________. Watch Free Video Solution on Doubtnut
618	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Find the minimum value of the expression $E=\|z\|^2+\|z-3\|^2+\|z-6i\|^2$ (where $z=x+iy,x,y\in$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity

619	Express $\frac{1}{1-\cos\theta+2i\sin\theta}$ in the form $x+iy$. Watch Free Video Solution on Doubtnut
620	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If $x=a+b, y=a\gamma+b\beta$ and $z=a\beta+b\gamma$, where γ and β are the imaginary cube roots of then $xyz=$ Watch Free Video Solution on Doubtnut
621	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If $x - iy = \sqrt{\frac{a-ib}{c-id}}$ prove that $x^2+y^2=\frac{a^2+b^2}{c^2+d^2}$ Watch Free Video Solution on Doubtnut
622	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Prove that x^3+x^2+x is factor of $(x+1)^n-x^n-1$ where n is odd integer greater than 3, but multiple of 3. Watch Free Video Solution on Doubtnut
623	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The real values of $xandy$ for which the following equation is satis $\frac{(1+i)(x-2i)}{3+i}+\frac{(2-3i)(y+1)}{3-i}=i$ $x=3, y=1$ b. $x=3, y=-1$ c. $x=-3, y=1$ d. $x=-3, y=$ Watch Free Video Solution on Doubtnut

624	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If z_0 is the circumcenter of an equilateral triangle with vertices z_1, z_2, z_3 then $z_1^2 + z_2^2 + z_3^2$ is to Watch Free Video Solution on Doubtnut
625	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** 8. If $z_1^2 + z_2^2 + 2z_{.}z_2 . \cos\theta = 0$ prove that the points represented by z_1, z_2, and the origin for isosceles triangle. Watch Free Video Solution on Doubtnut
626	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Show that the area of the triangle on the Argand diagram formed by the complex nu $z, izandz + iz$ is $\frac{1}{2}\|z\|^2$ Watch Free Video Solution on Doubtnut
627	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Complex numbers z_1, z_2, z_3 are the vertices A, B, C respectively of an isosceles right a trianglewith right angle at C and $\left(z_1 - z_2\right)^2 = k\left(z_1 - z_3\right)\left(z_3 - z_2\right)$, then find k. Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus

628	Let $z_1 = 10 + 6i$ and $z_2 = 4 + 6i$. If z is any complex number such that the argument of $\frac{(z - z}{(z - z}$ $\frac{\pi}{4}$, then prove that $\|z - 7 - 9i\| = 3\sqrt{2}$. Watch Free Video Solution on Doubtnut
629	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Show that if $iz^3 + z^2 - z + i = 0$, then $\|z\| = 1$ Watch Free Video Solution on Doubtnut
630	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** $\|z\| \leq 1, \|w\| \leq 1$, then show that $\|z - w\|^2 \leq (\|z\| - \|w\|)^2 + (argz - argw)^2$ Watch Free Video Solution on Doubtnut
631	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Find the non-zero complex numbers z satisfying $z = iz^2$. Watch Free Video Solution on Doubtnut
632	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let $z_1 and z_2$ b be toots of the equation $z^2 + pz + q = 0$, where he coefficients $pandq$ ma complex numbers. Let $AandB$ represent $z_1 and z_2$ in the complex plane, respectivel $\angle AOB = \theta \neq 0 and OA = OB, where O$ is the origin, prove that $p^2 = 4q\cos^2(\theta/2)$.

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633	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** For complex numbers z and w, prove that $\|z\|^2 w - \|w\|^2 z = z - w$, if and only if $z = w$ or $z\bar{w} = 1$. Watch Free Video Solution on Doubtnut
634	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Let a complex number $\alpha, \alpha \neq 1$, be a rootof hte euation $z^{p+q} - z^p - z^q + 1 = 0, wherep,$ distinct primes. Show that either $1 + \alpha + \alpha^2 + \; + \alpha^{p-1} = 0$ or $1 + \alpha + \alpha^2 + \; + \alpha^{q-1} = 0$, bu both together. Watch Free Video Solution on Doubtnut
635	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If z_1 and z_2 are two complex number such that $\left\|z_1\right\| < 1 < \left\|z_2\right\|$ then prove that $\left\|\frac{1 - z_1\bar{z}_2}{z_1 - z_2}\right\| < 1$ Watch Free Video Solution on Doubtnut
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636	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Find the centre and radius of the circle formed by all thepoints represented by $z =$ satisfying the relation $\left\|\frac{z - \alpha}{z - \beta}\right\| = k(k \neq 1)$, where α and β are the constant complex nun given by $\alpha = \alpha_1 + i\alpha_2, \beta = \beta_1 + i\beta_2$.

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637	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Prove that there exists no complex number z such that $\|a\| < \frac{1}{3}$ and $\sum_{n=1}^{n} a_r z^r = 1$, where $\|a_r\|$ Watch Free Video Solution on Doubtnut
638	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If $z^4 + 1 = \sqrt{3}i$ (A) z^3 is purely real (B) z represents the vertices of a square of side $2^{\frac{1}{4}}$ (C) purely imaginary (D) z represents the vertices of a square of side $2^{\frac{3}{4}}$ Watch Free Video Solution on Doubtnut
639	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** The maximum value of $\left\|arg\left(\frac{1}{1-z}\right)\right\|f$ or $\|z\| = 1, z \neq 1$ is given by. Watch Free Video Solution on Doubtnut
640	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** The set $\left\{Re\left(\frac{2iz}{1-z^2}\right): zisacomplexvmber, \|z\| = 1, z = \pm 1\right\}$ is________. Watch Free Video Solution on Doubtnut
641	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** If the cube roots of unity are $1, \omega, \omega^2$, then the roots of the equation $(x-1)^3 + 8 = 0$ $-1, 1+2\omega, 1+2\omega^2$ b. $-1, 1-2\omega, 1-2\omega^2$ c. $-1, -1, -1$ d. none of these Watch Free Video Solution on Doubtnut

642

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane

The smallest positive integer n for which $\left(\frac{1+i}{1-i}\right)^n = i$ is 8 (b) 16 (c) 12 (d) None of these

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

The complex numbers $z = x + iy$ which satisfy the equation $\left|\frac{z-5i}{z+5i}\right| = 1$ lie on

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane

If $z = \left[\left(\frac{\sqrt{3}}{2}\right)+\frac{i}{2}\right]^5 + \left[\left(\frac{\sqrt{3}}{2}\right)-\frac{i}{2}\right]^5$, then $Re(z) = 0$ b. $Im(z) = 0$ c. $Re(z) > 0$ d. $Re(z) > 0, Im($

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CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane

$|z-4|<|z-2|$ represents the region given by: a. Re(z)>0 b. Re(z)<0 c. Re(z)>3 d. None of th

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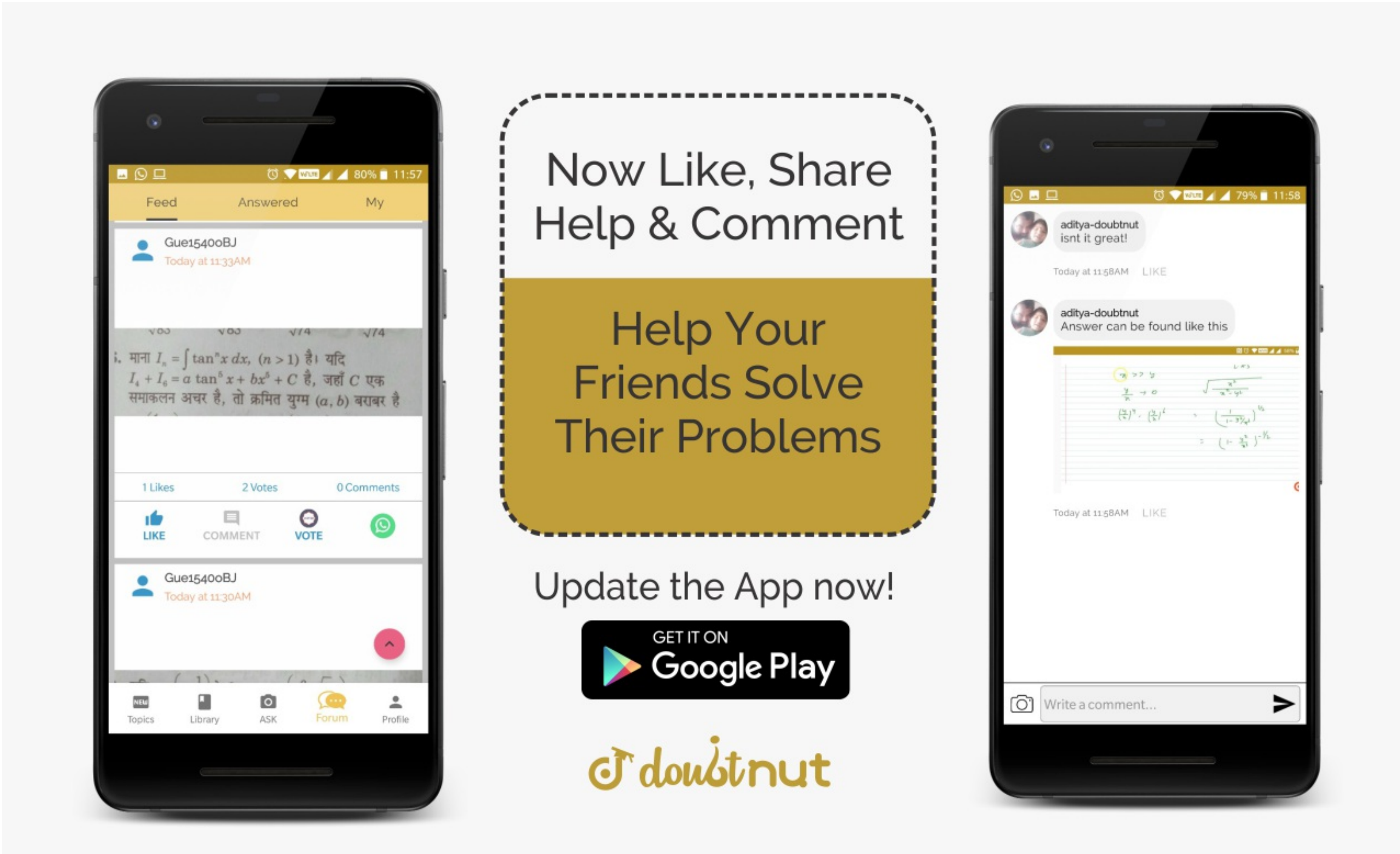
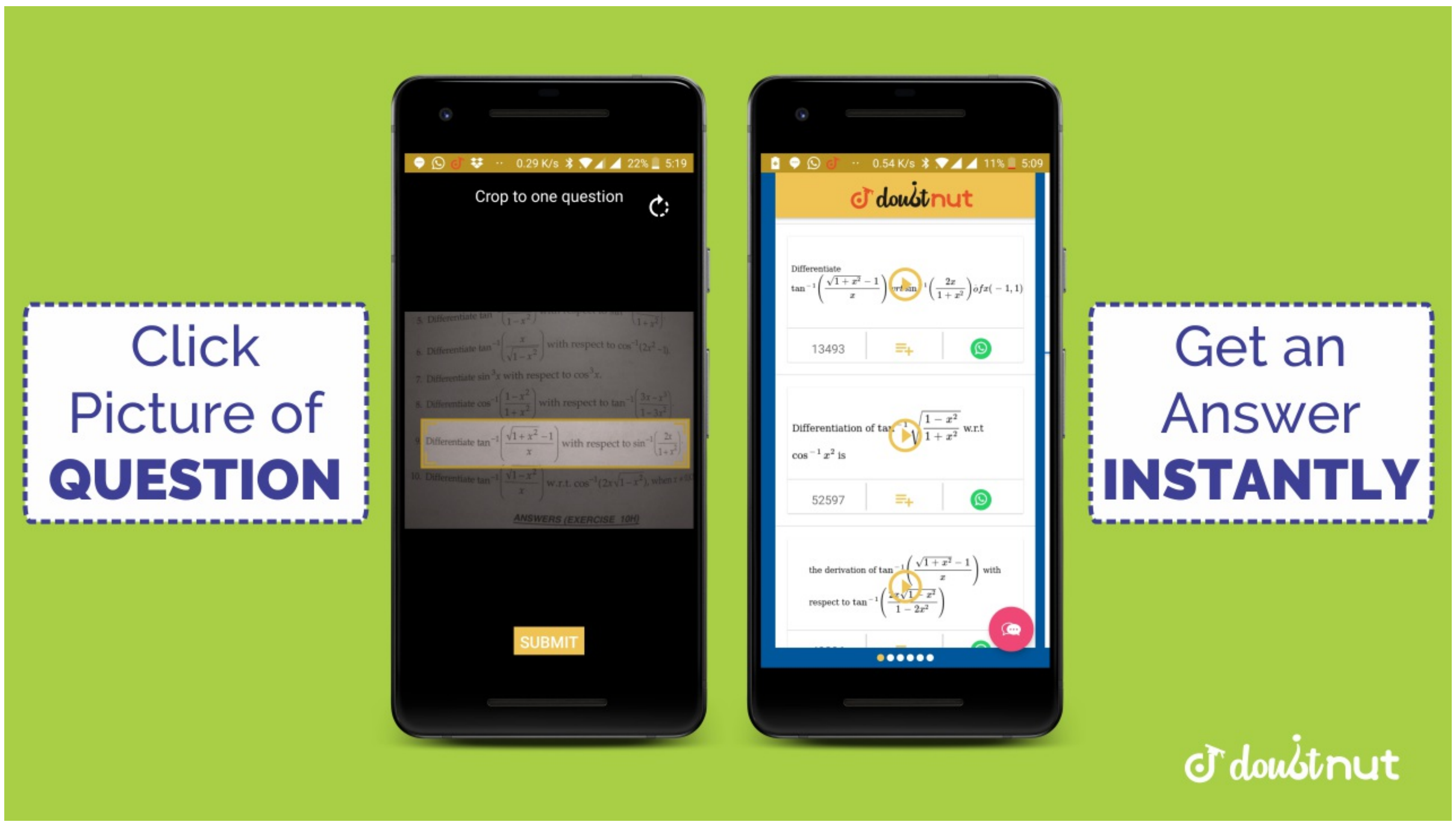
CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers

646	If $z = x + iy$ and $w = \frac{1 - iz}{z - i}$, then $\lvert w \rvert = 1$ implies that in the complex plane (A)z lies on imag axis (B) z lies on real axis (C)z lies on unit circle (D) None of these Watch Free Video Solution on Doubtnut
647	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Conjugate Of A Complex Number** The points, $z_1, z_2, z_3, z_4,$ in the complex plane are the vartices of a parallelogram taken in o if and only if $z_1 + z_4 = z_2 + z_3$ $z_1 + z_3 = z_2 + z_4$ $z_1 + z_2 = z_3 + z_4$ (d) None of these Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
648	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Cube Roots Of Unity** The complex number $\sin x + i\cos 2x$ and $\cos - i\sin 2x$ are conjugate to each other when Watch Free Video Solution on Doubtnut
649	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR** **EQUATIONS_Properties Of Arguments** If ω is a cube root of unity and $(\omega - 1)^7 = A + B\omega$ then find the values of A and B` Watch Free Video Solution on Doubtnut

650	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let z and ω be two complex numbers such that $\lvert z\rvert \leq 1, \lvert\omega\rvert \leq 1$ and $\lvert z - i\omega\rvert = \lvert z - i\bar{\omega}\rvert = 2$, t equals (a)$1$ or i (b). i or $-i$ (c). 1 or -1 (d). i or -1 Watch Free Video Solution on Doubtnut
651	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** If n_1, n_2 are positive integers, then $(1+i)^{n_1} + \left(1+i^3\right)^{n_1} + \left(1+i_5\right)^{n_2} + \left(1+i^7\right)^{n_2}$ is real i only if : Watch Free Video Solution on Doubtnut
652	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** If $i = \sqrt{-1}$, then $4 + 5\left(\left(-\frac{1}{2}\right) + \left(i\frac{\sqrt{3}}{2}\right)\right)^{334} + 3\left(\left(-\frac{1}{2}\right) + \left(i\frac{\sqrt{3}}{2}\right)\right)^{365}$ is equal to: Watch Free Video Solution on Doubtnut
653	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $arg(z) < 0$, then $arg(-z) - a\,r\,g(z)$ equals π (b) $-\pi$ (d) $-\frac{\pi}{2}$ (d) $\frac{\pi}{2}$ Watch Free Video Solution on Doubtnut
	CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR

654	EQUATIONS_Properties Of Modulus If z_1, z_2, z_3 are complex numbers such that $\left\|z_1\right\| = \left\|z_2\right\| = \left\|z_3\right\| = \left\|\frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3}\right\| = 1$ $\left\|z_1 + z_2 + z_3\right\|$ is equal to Watch Free Video Solution on Doubtnut
655	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Q. Let z_1 and z_2 be nth roots of unity which subtend a right angle at the origin, then n mu the form $4k$. Watch Free Video Solution on Doubtnut
656	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** The complex numbers $z_1 z_2$ and $z3$ satisfying $\frac{z_1 - z_3}{z_2 - z_3} = \frac{1 - i\sqrt{3}}{2}$ are the vertices of triangle v is (1) of area zero (2) right angled isosceles(3) equilateral (4) obtuse angled isosceles Watch Free Video Solution on Doubtnut
657	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** For all complex numbers z_1, z_2 satisfying $\left\|z_1\right\| = 12$ and $\left\|z_2 â^{\prime\prime} 3 â^{\prime\prime} 4i\right\| = 5$, find the minimum of $\left\|z_1 â^{\prime\prime} z_2\right\|$ Watch Free Video Solution on Doubtnut
658	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If $\|z\| = 1$ and $w = \frac{z - 1}{z + 1}$ (where $z \neq -1$), then $Re(w)$ is 0 (b) $\frac{1}{\|z + 1\|^2}$ $\left\|\frac{1}{z + 1}\right\|$, $\frac{1}{\|z + 1\|^2}$ (d) $\frac{\sqrt{2}}{\|z\|1\|^2}$ Watch Free Video Solution on Doubtnut
659	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** If $\omega(\neq 1)$be an imaginary cube root of unity and $\left(1 + \omega^2\right)^n = \left(1 + \omega^4\right)^n$, then the least po value of n is Watch Free Video Solution on Doubtnut



660	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** a, b, c are integers, not all simultaneously equal, and ω is cube root of unity $(\omega \neq 1)$, minimum value of $\left\|a + b\omega + c\omega^2\right\|$ is 0 b. 1 c. $\frac{\sqrt{3}}{2}$ d. $\frac{1}{2}$ Watch Free Video Solution on Doubtnut
661	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** If a, b, c and u, v, w are the complex numbers representing the vertices of two triangles sucl $(c = (1 - r)a + rb$ and $w = (1 - r)u + rv,$ where r is a complex number, then the two triangles the same area (b) are similar are congruent (d) None of these Watch Free Video Solution on Doubtnut
662	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** If $z_1 and z_2$ are two nonzero complex numbers such that $= \left\|z_1 + z_2\right\| = \left\|z_1\right\| + \left\|z_2\right\|,$ $arg z_1 - arg z_2$ is equal to $-\pi$ b. $\frac{\pi}{2}$ c. 0 d. $\frac{\pi}{2}$ e. π Watch Free Video Solution on Doubtnut
663	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** $\sum_{k=1}^{6}\left(\sin, \frac{2\pi k}{7} - i\cos, \frac{2\pi k}{7}\right) = ?$ Watch Free Video Solution on Doubtnut

664

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity

If ω is an imaginary cube root of unity, then $\left(1+\omega-\omega^2\right)^7$ is equal to 128ω (b) -128ω 128ω $-128\omega^2$

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665

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Introduction

The value of $sum\sum_{n=1}^{13}\left(i^n+i^{n+1}\right), w h e r e i = \sqrt{-1} e q u a l s\ i$ (b) $i-1$ (c) $-i$ (d) 0

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666

CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers

If $|6i - 3i143i - 1203i| = x+iy,$ then $x=3, y=1$ b. $x=1, y=3$ c. $x=0, y=3$ d. $x=0, y=0$

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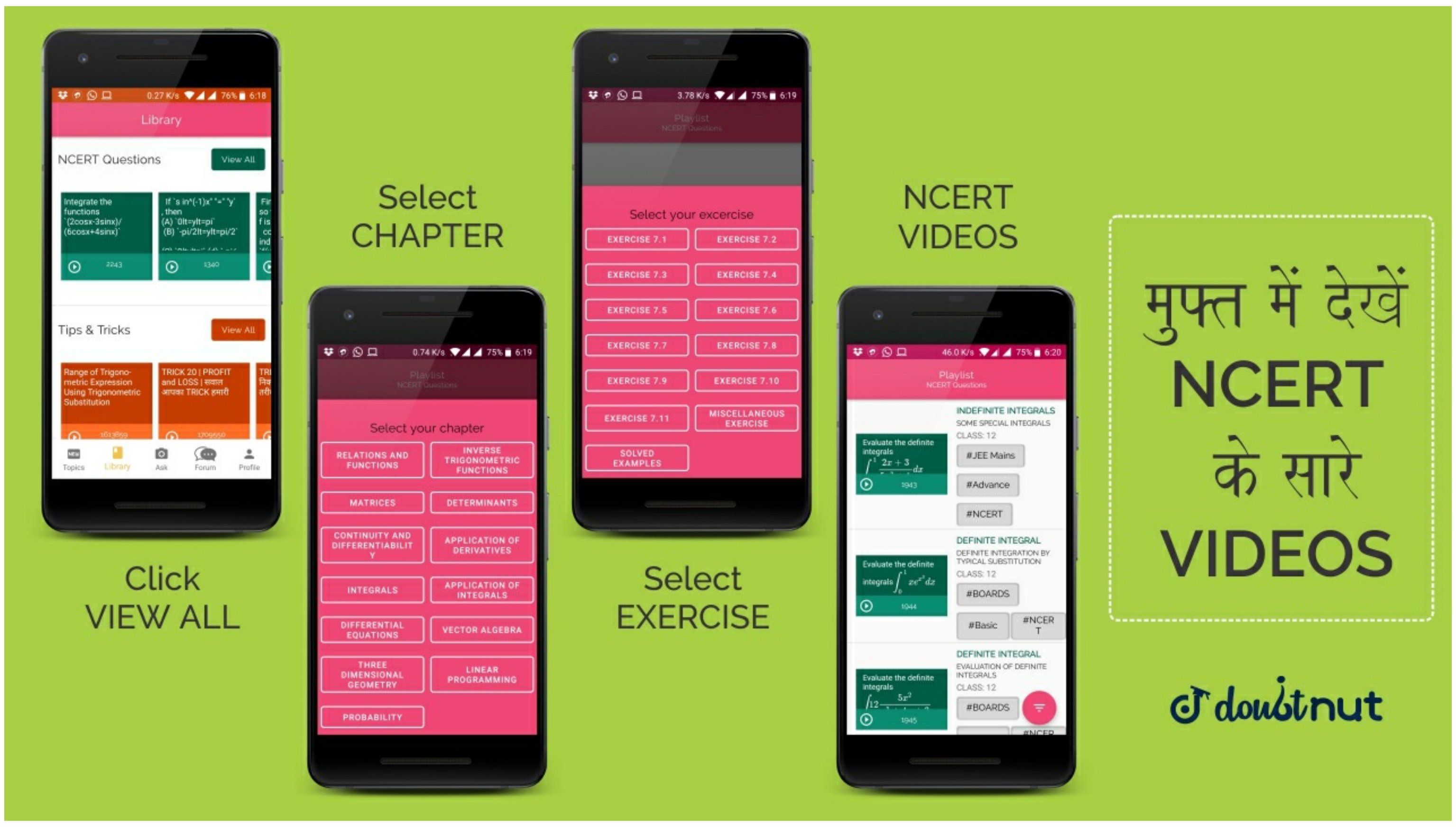
667	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Cube Roots Of Unity** Let $\omega = -\frac{1}{2} + i\frac{\sqrt{3}}{2}$, then value of the determinant $\left|1111 - 1 - \omega^2\omega^2 1\omega^2\omega\right|$i s 3ω (b) $3\omega(\omega - 1$ (d) $3\omega(1 - \omega)$ Watch Free Video Solution on Doubtnut
668	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Conjugate Of A Complex Number** If $w = \alpha + i\beta$, where $\beta \neq 0$ and $z \neq 1$, satisfies the condition that $\left(\frac{w - wz}{1 - z}\right)$ is a purely real, the set of values of z is $|z| = 1, z \neq 2$ (b) $|z| = 1andz \neq 1$ $z = z$ (d) None of these Watch Free Video Solution on Doubtnut
669	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** A man walks a distance of 3 units from the origin towards the North-East $(N4$ direction.From there, he walks a distance of 4 units towards the North-West $\left(N45^0W\right)$ dire to reach a point P. Then, the position of P in the Argand plane is $3e^{\frac{i\pi}{4}} + 4i$ (b) $(3 - 4$ $(4 + 3i)e^{\frac{i\pi}{4}}$ (d) $(3 + 4i)e^{\frac{i\pi}{4}}$ Watch Free Video Solution on Doubtnut
670	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Standard Loci In The Argand Plane** If $|z| = 1andz \neq \pm 1$, then all the values of $\frac{z}{1 - z^2}$ lie on a line not passing through the o $|z| = \sqrt{2}$ the x-axis (d) the y-axis Watch Free Video Solution on Doubtnut
671	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** A particle P starts from the point $z_0 = 1 + 2i$, where $i = \sqrt{-1}$. It moves first horizontally from origin by 5 units and then vertically away from origin by 3 units to reach a point z_1. Fro the particle moves $\sqrt{2}$ units in the direction of the vector $\hat{i} + \hat{j}$ and then it moves throug angle $\frac{\pi}{2}$ in anticlockwise direction on a circle with centre at origin, to reach a point z_2. The z_2 is given by $6 + 7i$ (b) $-7 + 6i$ $7 + 6i$ (d) $-6 + 7i$ Watch Free Video Solution on Doubtnut

doubtnut पढ़ना हुआ आसान	
672	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Geometry With Complex Numbers** Let $z = x + iy$ be a complex number where $xandy$ are integers. Then, the area of the rect whose vertices are the roots of the equation $zz^3 + zz^3 = 350$ is 48 (b) 32 (c) 40 (d) 80 Watch Free Video Solution on Doubtnut
673	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Definition Of Complex Numbers** Let z be a complex number such that the imaginary part of z is nonzero and a = z2 + z real. Then a cannot take the value (A) –1 (B) 1 3 (C) 1 2 (D) 3 4 Watch Free Video Solution on Doubtnut
674	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Arguments** Let complex numbers α and $\frac{1}{\alpha}$ lies on circles $\left(x - x_0\right)^2 + \left(y - y_0\right)^2 = r^2$ $\left(x - x_0\right)^2 + \left(y - y_0\right)^2 = 4r^2$ respectively. If $z_0 = x_0 + iy_0$ satisfies the equation $2\left\|z_0\right\|^2 = r^2 + 2$ $\|\alpha\|$ is equal to Watch Free Video Solution on Doubtnut
675	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $A\left(z_1\right)$ and $\left(z_2\right)$ represent two complex numbers on the complex plane. Suppos complex slope of the line joining A and B is defined as $\frac{z_1 - z_2}{\bar{z}_1 - \bar{z}_2}$.If the line l_1, with complex s ω_1, and l_2, with complex slope $omeg_2$, on the complex plane are perpendicular then prove $\omega_1 + \omega_2 = 0$.

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676	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** Let $z_1 and z_2$ be complex numbers such that $z_1 \neq z_2$ and $\left\|z_1\right\| = \left\|z_2\right\|$. If z_1 has positive rea and z_2 has negative imaginary part, then $\frac{z_1 + z_2}{z_1 - z_2}$ may be zero (b) real and positive rea negative (d) purely imaginary Watch Free Video Solution on Doubtnut
677	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Let w = $(\sqrt{3}+i\frac{)}{2}$ and $P = \{w^n : n = 1, 2, 3, ...\}$, Fu $H_1 = \left\{z \in C : Re(z) > \frac{1}{2}\right\}$ and $H_2 = \left\{z \in c : Re(z) < -\frac{1}{2}\right\}$ Where C is set of all cor numbers. If $z_1 \in P \cap H_1, z_2 \in P \cap H_2$ and O represent the origin, then $\angle Z_1OZ_2$ = Watch Free Video Solution on Doubtnut
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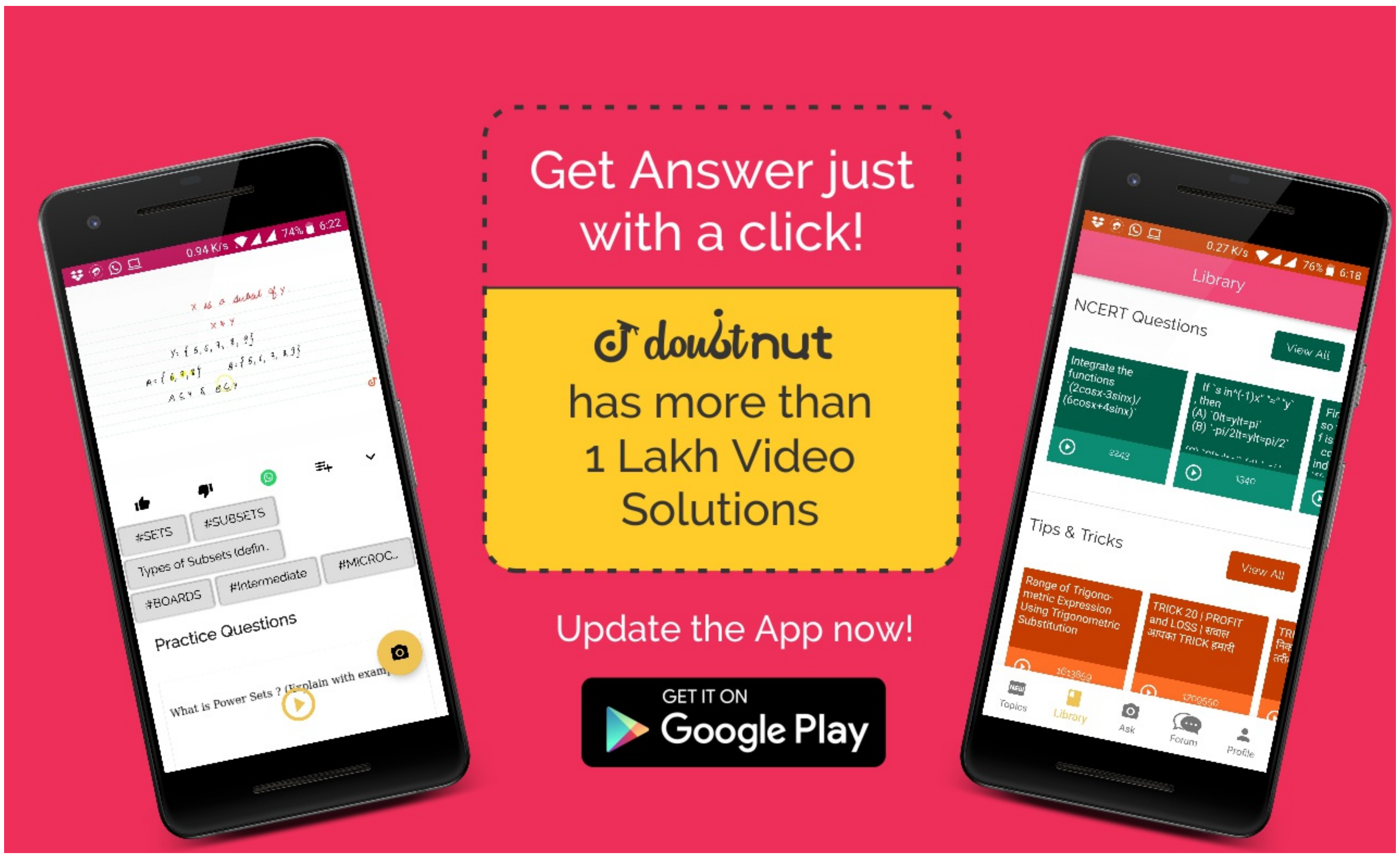
678	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** Let $z_k = \cos\left(2k\frac{\pi}{10}\right) + i\sin\left(2k\frac{\pi}{10}\right); k = 1, 2, 34, ..., 9$ (A) For each z_k there exists a z_j such $z_k.z_j = 1$ (ii) there exists a $k \in \{1, 2, 3, ..., 9\}$ such that $z_1z = z_k$ Watch Free Video Solution on Doubtnut

679	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Let ω be the complex number $\cos\left(\frac{2\pi}{3}\right) + i\sin\left(\frac{2\pi}{3}\right)$. Then the number of distinct comple numbers z satisfying $\Delta = \begin{vmatrix} z+1 & \omega & \omega^2 \\ \omega & z+\omega^2 & 1 \\ \omega^2 & 1 & z+\omega \end{vmatrix} = 0$ is Watch Free Video Solution on Doubtnut
680	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Properties Of Modulus** If z is any complex number satisfying $\lvert z-3-2i\rvert \leq 2$ then the maximum value of $\lvert 2z-6+5i\rvert$ i Watch Free Video Solution on Doubtnut
681	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_Miscellaneous** Let $\omega = e^{\frac{i\pi}{3}}$ and a, b, c, x, y, z be non-zero complex numbers such $a+b+c=x, a+b\omega+c\omega^2=y, a+b\omega^2+c\omega=z$.Then, the value of $\frac{\lvert x\rvert^2+\lvert y\rvert^2+\lvert y\rvert^2}{\lvert a\rvert^2+\lvert b\rvert^2+\lvert c\rvert^2}$ Watch Free Video Solution on Doubtnut
682	**CENGAGE_MATHS_ALGEBRA_COMPLEX NUMBERS AND QUADR EQUATIONS_The Nth Root Of Unity** For any integer k, let $\alpha_k = \cos\left(\frac{k\pi}{7}\right) + i\sin\left(\frac{k\pi}{7}\right), where i = \sqrt{-1}$. Value of the expres $\frac{\sum_{k=1}^{12}\left\lvert\alpha_{k+1}-\alpha_k\right\rvert}{\sum_{k=1}^{3}\left\lvert\alpha_{4k-1}-\alpha_{4k-2}\right\rvert}$ is Watch Free Video Solution on Doubtnut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