JEE MAINS MATHS SOLUTIONS

YEAR 2016

Ques No.	Question
1	**JEE MAINS MATHS SOLUTIONS - 2016** If `f(x)+2f(1/x)=3x , x!=0,` and `S={x in R :f(x)=f(-x)}` ; then S: (1) is an empty set. (2) contains exactly one element. (3) contains exactly two elements. (4) contains more than two elements Watch Free Video Solution on Doubtnut
2	**JEE MAINS MATHS SOLUTIONS - 2016** A value of for which `(2+3isintheta)/(1-2isintheta)` purely imaginary, is : (1) `pi/3` (2) `pi/6` (3) `sin^(-1)((sqrt(3))/4)` (4) `sin^(-1)(1/(sqrt(3)))` Watch Free Video Solution on Doubtnut
3	**JEE MAINS MATHS SOLUTIONS - 2016** The sum of all real values of x satisfying the equation `(x^2-5x+5)^(x^2+4x-60)=1` is: (1) 3 (2) `-4` (3) 6 (4) 5 Watch Free Video Solution on Doubtnut

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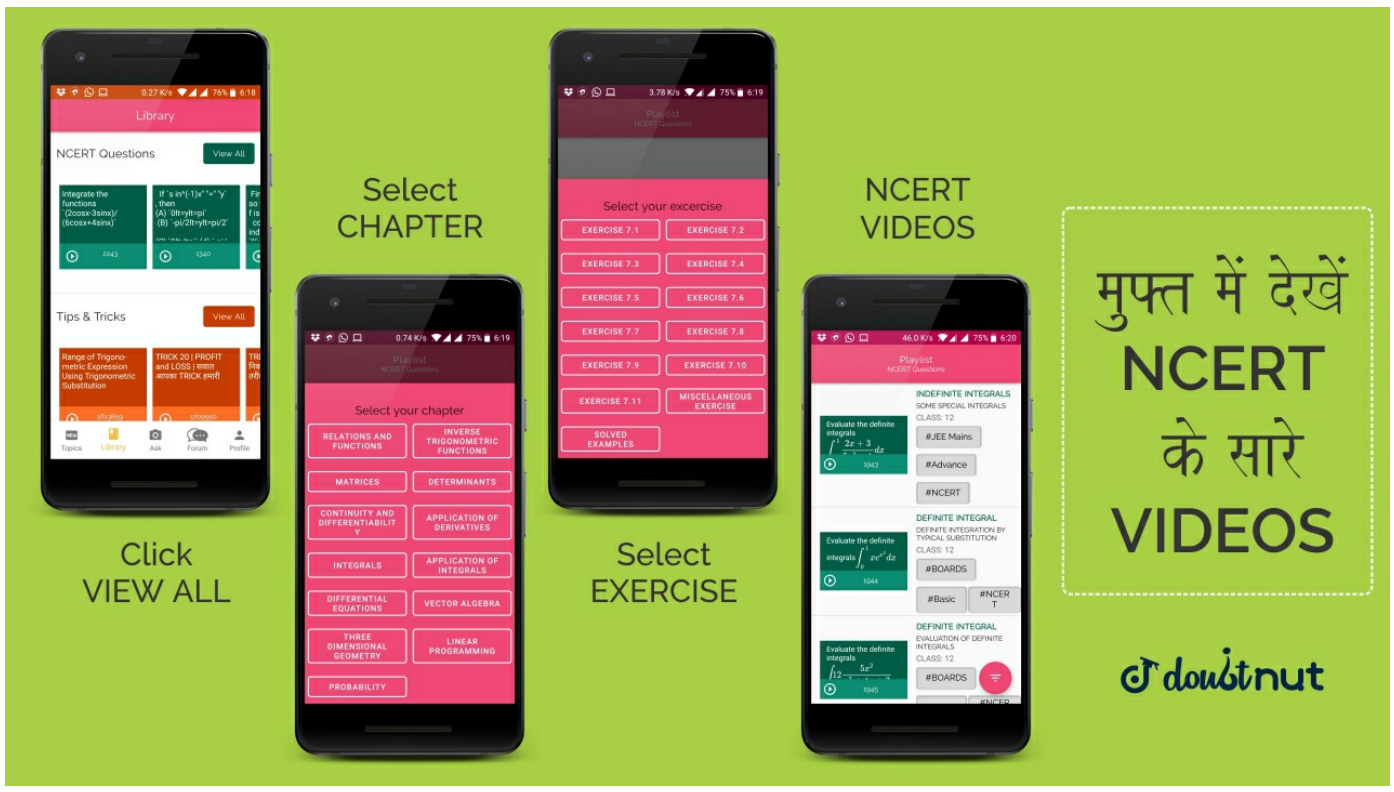
4	**JEE MAINS MATHS SOLUTIONS - 2016** If `A=[5a-b3 2]` and A adj `A=AA^T` , then `5a+b` is equal to: (1) `-1` (2) 5 (3) 4 (4) 13 Watch Free Video Solution on Doubtnut
5	**JEE MAINS MATHS SOLUTIONS - 2016** The system of linear equations `x+lambday-z=0` `lambdax-y-z=0` `x+y-lambdaz=0` has a non-trivial solution for : (1) infinitely many values of `lambda` . (2) exactly one value of `lambda` . (3) exactly two values of `lambda` . (4) exactly three values of `lambda` . Watch Free Video Solution on Doubtnut
6	**JEE MAINS MATHS SOLUTIONS - 2016** If all the words (with or without meaning) having five letters, formed using the letters of the word SMALL and arranged as in a dictionary; then the position of the word SMALL is : (1) 46th (2) 59th (3) 52nd (4) 58th Watch Free Video Solution on Doubtnut
7	**JEE MAINS MATHS SOLUTIONS - 2016** If the number of terms in the expansion of `(1-2/x+4/(x^2))^n , x!=0,` is 28, then the sum of the coefficients of all the terms in this expansion, is : (1) 64 (2) 2187 (3) 243 (4) 729 Watch Free Video Solution on Doubtnut

8	**JEE MAINS MATHS SOLUTIONS - 2016** If the 2nd , 5th and 9th terms of a non-constant A.P. are in G.P., then the common ratio of this G.P. is : (1) `8/5` (2) `4/3` (3) 1 (4) `7/4` Watch Free Video Solution on Doubtnut
9	**JEE MAINS MATHS SOLUTIONS - 2016** If the sum of the first ten terms of the series `(1 3/5)^2+(2 2/5)^2+(3 1/5)^2+4^2+(4 4/5)^2+. . . . .,` is `(16)/5` m, then m is equal to: (1) 102 (2) 101 (3) 100 (4) 99 Watch Free Video Solution on Doubtnut
10	**JEE MAINS MATHS SOLUTIONS - 2016** Let `p=(lim)_(xvec0+)(1+tan^2sqrt(x))^(1//2x)` then `logp` is equal to: (1) 2 (2) 1 (3) `1/2` (4) `1/4` Watch Free Video Solution on Doubtnut
11	**JEE MAINS MATHS SOLUTIONS - 2016** For `x in R ,f(x)=|log2-sinx|` and `g(x)=f(f(x))` , then (1)`g` is not differentiable at `x=0` (2) `g'(0)=cos(log2)` (3) `g'(0)=-cos(log2)` (4)g is differentiable at ` x=0` and `g'(0)=-sin(log2)` Watch Free Video Solution on Doubtnut

12	**JEE MAINS MATHS SOLUTIONS - 2016** Consider `f(x)=tan^(-1)(sqrt((1+sinx)/(1-sinx))), x in (0,pi/2)dot` A normal to `y=f(x)` at `x=pi/6` also passes through the point: (1) (0, 0) (2) `(0,(2pi)/3)` (3) `(pi/6,0)` (4) `(pi/4,0)` Watch Free Video Solution on Doubtnut
13	**JEE MAINS MATHS SOLUTIONS - 2016** A wire of length 2 units is cut into two parts which are bent respectively to form a square of `s i d e=x` units and a circle of `r a d i u s=r` units. If the sum of the areas of the square and the circle so formed is minimum, then : (1) `2x=(pi+4)r` (2) `(pi+4)x=pir` (3) `x=2r` (4) `2x=r` Watch Free Video Solution on Doubtnut
14	**JEE MAINS MATHS SOLUTIONS - 2016** The integral `int(2x^(12)+5x^9)/((x^5+x^3+1)^3)dx` is equal to: (1) `(-x^5)/((x^5+x^3+1)^2)+C` (2) `(x^(10))/(2(x^5+x^3+1)^2)+C` (3) `(x^5)/(2(x^5+x^3+1)^2)+C` (4) `(-x^(10))/(2(x^5+x^3+1)^2)+C` where C is an arbitrary constant. Watch Free Video Solution on Doubtnut
15	**JEE MAINS MATHS SOLUTIONS - 2016** `(lim)_(nvecoo)(((n+1)(n+2). . . . 3 n)/(n^(2n)))^(1//n)` is equal to: (1) `(18)/(e^4)` (2) `(27)/(e^2)` (3) `9/(e^2)` (4) `3log3-2` Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	

16	**JEE MAINS MATHS SOLUTIONS - 2016** The area (in sq. units) of the region `{(x , y): y^2geq2x"and"x^2+y^2lt=4x , xgeq0}` is : (1) `pi-4/3` (2) `pi-8/3` (3) `pi-(4sqrt(2))/3` (4) `pi-(2sqrt(2))/3` Watch Free Video Solution on Doubtnut
17	**JEE MAINS MATHS SOLUTIONS - 2016** If a curve `y=f(x)` passes through the point `(1,-1)` and satisfies the differential equation `,y(1+x y)dx""=x""dy` , then `f(-1/2)` is equal to: (1) `-2/5` (2) `-4/5` (3) `2/5` (4) `4/5` Watch Free Video Solution on Doubtnut
18	**JEE MAINS MATHS SOLUTIONS - 2016** Two sides of a rhombus are along the lines,`x-y+1=0` and `7x-y-5=0` . If its diagonals intersect at `(-1,-2)` , then which one of the following is a vertex of this rhombus ? Watch Free Video Solution on Doubtnut
19	**JEE MAINS MATHS SOLUTIONS - 2016** The centres of those circles which touch the circle, `x^2+y^2-8x-8y-4=0` , externally and also touch the x-axis, lie on : (1) a circle. (2) an ellipse which is not a circle. (3) a hyperbola. (4) a parabola. Watch Free Video Solution on Doubtnut

20	**JEE MAINS MATHS SOLUTIONS - 2016** If one of the diameters of the circle, given by the equation, `x^2+y^2-4x+6y-12=0` , is a chord of a circle S, whose centre is at `(-3,""2)` , then the radius of S is : Watch Free Video Solution on Doubtnut
21	**JEE MAINS MATHS SOLUTIONS - 2016** Let P be the point on the parabola, `y^2=8x` which is at a minimum distance from the centre C of the circle,`x^2+(y+6)^2=1.` Then the equation of the circle, passing through C and having its centre at P is : (1) `x^2+y^2-4x+8y+12=0` (2) `x^2+y^2-x+4y-12=0` (3) `x^2+y^2-x/4+2y-24=0` (4) `x^2+y^2-4x+9y+18=0` Watch Free Video Solution on Doubtnut
22	**JEE MAINS MATHS SOLUTIONS - 2016** The eccentricity of the hyperbola whose length of the latus rectum is equal to 8 and the length of its conjugate axis is equal to half of the distance between its foci, is : (1) `4/3` (2) `4/(sqrt(3))` (3) `2/(sqrt(3))` (4) `sqrt(3)` Watch Free Video Solution on Doubtnut
23	**JEE MAINS MATHS SOLUTIONS - 2016** The distance of the point `(1,-5,""9)` from the plane `x-y+z=5` measured along the line `x=y=z` is : (1) `3sqrt(10)` (2) `10sqrt(3)` (3) `(10)/(sqrt(3))` (4) `(20)/3` Watch Free Video Solution on Doubtnut

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24	If the line, `(x-3)/2=(y+2)/(-1)=(z+4)/3` lies in the place, `l x+m y-z=9` , then `l^2+m^2` is equal to: (1) 26 (2) 18 (3) 5 (4) 2 Watch Free Video Solution on Doubtnut
25	**JEE MAINS MATHS SOLUTIONS - 2016** Let ` vec a , vec b"and" vec c` be there unit vectors such that ` vec axx( vec bxx vec c)=(sqrt(3))/2( vec b+ vec c)` . If ` vec b` is not parallel to ` vec c` , then the angle between ` vec a"and" vec b` is: (1) `(3pi)/4` (2) `pi/2` (3) `(2pi)/3` (4) `(5pi)/6` Watch Free Video Solution on Doubtnut
26	**JEE MAINS MATHS SOLUTIONS - 2016** If the standard deviation of the numbers 2, 3, a and 11 is 3.5, then which of the following is true ? Watch Free Video Solution on Doubtnut
27	**JEE MAINS MATHS SOLUTIONS - 2016** Let two fair six-faced dice A and B be thrown simultaneously. If `E_1` is the event that die A shows up four, `E_2` is the event that die B shows up two and `E_3` is the event that the sum of numbers on both dice is odd, then which of the following statements is NOT true ? (1) `E_1` and `E_2` are independent. (2) `E_2` and `E_3` are independent. (3) `E_1` and `E_3` are independent. (4) `E_1` , `E_2` and `E_3` are independent. Watch Free Video Solution on Doubtnut
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28	**JEE MAINS MATHS SOLUTIONS - 2016** If `0lt=x<2pi` , then the number of real values of x, which satisfy the equation `cosx+cos2x+cos3x+cos4x=0,` is : (1) 3 (2) 5 (3) 7 (4) 9 Watch Free Video Solution on Doubtnut

29	**JEE MAINS MATHS SOLUTIONS - 2016** A man is walking towards a vertical pillar in a straight path, at a uniform speed. At a certain point A on the path, he observes that the angle of elevation of the top of the pillar is `30^0` . After walking for 10 minutes from A in the same direction, at a point B, he observes that the angle of elevation of the top of the pillar is`60^0` . Then the time taken (in minutes) by him, from B to reach the pillar, is : (1) 6 (2) 10 (3) 20 (4) 5 Watch Free Video Solution on Doubtnut
30	**JEE MAINS MATHS SOLUTIONS - 2016** The Boolean Expression `(p^^~ q)vvqvv(~ p^^q)` is equivalent to : (1) `~ p^^q` (2) `p^^q` (3) `pvvq` (4) `pvv~ q` Watch Free Video Solution on Doubtnut
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