Ques No.	Question
1	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 1** Evaluate the determinants in $\|24 - 5 - 1\|$ ▶ Watch Free Video Solution on Doubtnut
2	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 2** Evaluate the determinants in (i) $\|\cos\theta$ $-\sin\theta\sin\theta\cos\theta\|$ (ii) $\|x^2 - x + 1x - 1x$ $+ 1x + 1\|$ ▶ Watch Free Video Solution on Doubtnut
3	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 3** If $A = \begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix}$, then show that $\|2A\| = 4\|A\|$ ▶ Watch Free Video Solution on Doubtnut
4	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 4** If $A = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 4 \end{bmatrix}$, then show that $\|3A\| = 27\|A\|$ ▶ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 5 Evaluate the determinants (i) $\|3 - 1 - 200 - 13$ $- 50\|$ (ii) $\|3 - 4511 - 2231\|$ (iii)

5	$\begin{vmatrix} 0 & 1 & 2 \\ -1 & 0 & -3 \\ -2 & 3 & 0 \end{vmatrix}$ (iv) $\begin{vmatrix} 2 & -1 & -2 \\ 0 & 2 & -1 \\ 3 & -5 & 0 \end{vmatrix}$ ▶ Watch Free Video Solution on Doubtnut

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 6

If
$A = \begin{bmatrix} 1 & 1 & -2 \\ 2 & 1 & -3 \\ 5 & 4 & -9 \end{bmatrix}$
. Find $|A|$.

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 7

Find values of x, if (i) $\begin{vmatrix} 2 & 4 \\ 5 & 1 \end{vmatrix} = \begin{vmatrix} 2x & 4 \\ 6 & x \end{vmatrix}$ (ii) $\begin{vmatrix} 2 & 3 \\ 4 & 5 \end{vmatrix} = \begin{vmatrix} x & 3 \\ 2x & 5 \end{vmatrix}$

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.1 - Q 8

If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$, then x is equal to (A) 6 (B) ± 6 (C) -6 (D) 0

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 1

Using the property of determinants and without expanding, prove that:

9	$\lvert xax + ayby + bzcz$ $+ c \rvert = 0$
10	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 2** Using the property of determinants and without expanding, prove that: $\lvert a - \; - \; - ab -$ $- aa - bc - aa -$ $- c \rvert = 0$
11	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 3** Using the property of determinants and without expanding, prove that: $\lvert 276538754986 \rvert = 0$
12	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 4** Using the property of determinants and without expanding, prove that: $\lvert 1bca(b + c)1cab(c$ $+ a)1abx(a + b) \rvert$ $= 0$
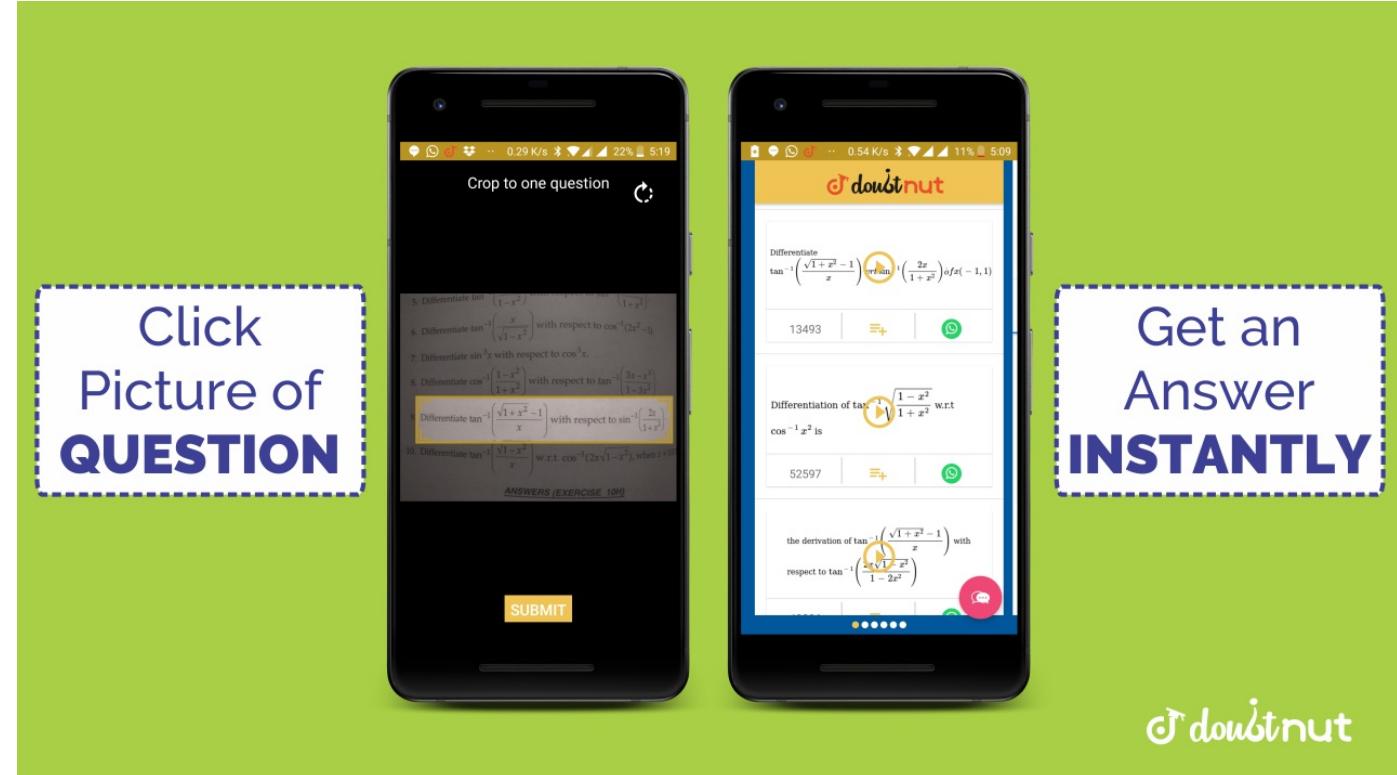
13	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 5** Using the property of determinants and without expanding, prove that: $\|b + cq + ry + zc$ $+ ar + pz + xa$ $+ bp + qx + y\|$ $= 2\|apxbqycrz\|$ ▶ Watch Free Video Solution on Doubtnut
14	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 6** Using the property of determinants and without expanding, prove that: $\|0a - b - a0 - cbc0\|$ $= 0$ ▶ Watch Free Video Solution on Doubtnut
15	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 7** Using the property of determinants and without expanding, prove that: $\| - a^2 abacbab^2 bacb$ $- c^2\| = 4a^2b^2c^2$ ▶ Watch Free Video Solution on Doubtnut
16	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 8** By using properties of determinants. Show that: (i) $\|1aa^21 \text{ ̂ } 21 \text{ ̂ } 2\|$ $= (a - b)(b - c)(c$ $- a)$ (ii) $\|111abca^3b^3c^3\|$ $= (a - b)(b - c)(c$ $- a)(a + b + c)$ ▶ Watch Free Video Solution on Doubtnut
17	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 9** By using properties of determinants. Show that: $\| \times^2 yzyy^2 zxzz^2 xy\|$ $= (x - y)(y - z)(z$ $- x)(xy + yz + zx)$
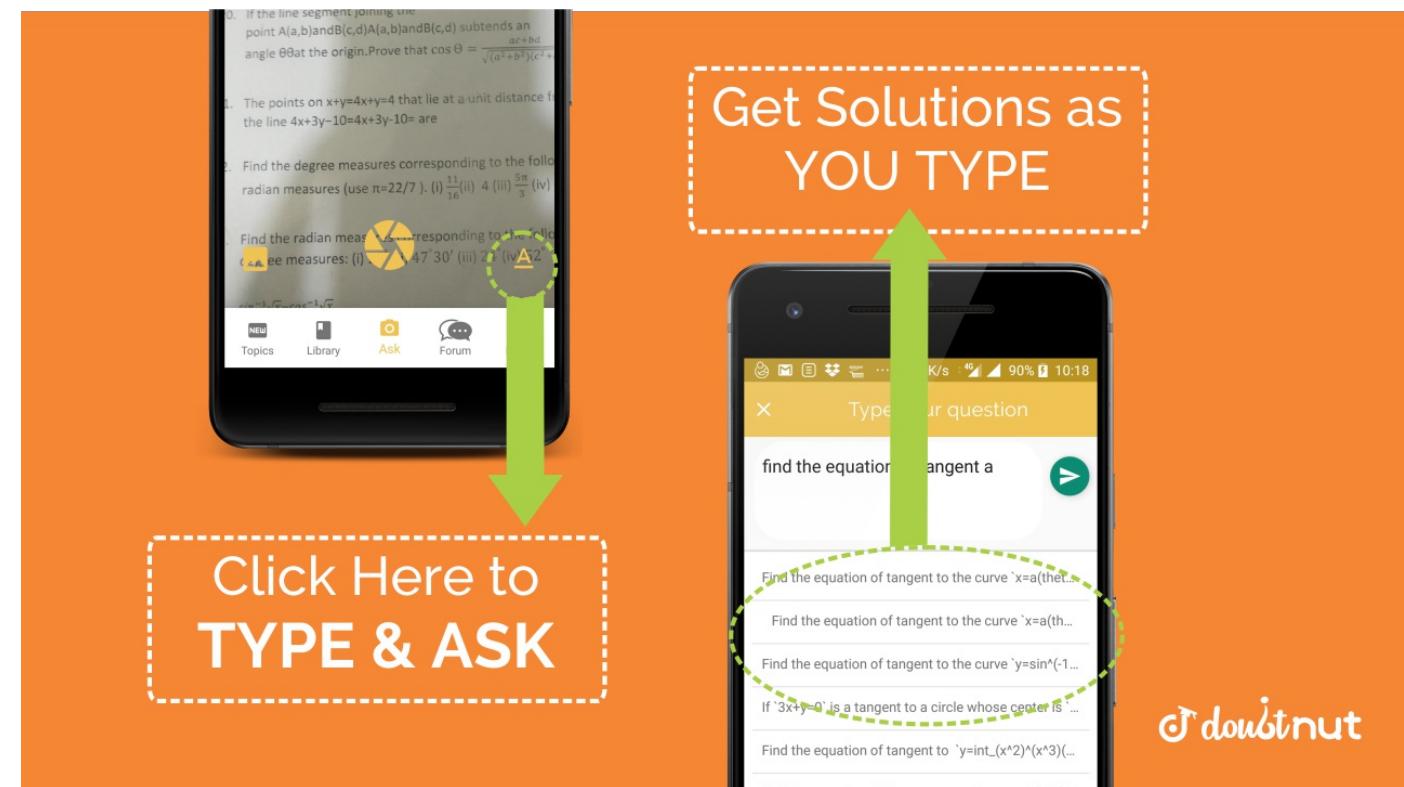
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 10

By using properties of determinants. Show that: (i)
$$|x + 42x2x2 \times$$

$$+ 42x2x2 \times \ + 4|$$

$$= (5x - 4)(4 - x)^2$$

(ii)
$$|y + kyyyy + kyyyy$$

$$+ k| = k^2\left(2y\dot{k}\right)^2$$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 11

By using properties of determinants. Show that: (i)
$$|a - b - c2a2a2 - c$$

$$- a2b2c2 - a - b|$$

$$= (a + b + c)^3$$

(ii)
$$|x + y + 2zxyzy + z$$

$$+ 2xyzxz + x + 2y|$$

$$= 2(x + y + z)^3$$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 12

By using properties of determinants. Show that:

|	
20	$\begin{vmatrix} 1 \times^2 & x^2 1 \times & x^2 1 \end{vmatrix}$ $= (1 - x^3)^2$ ▶ Watch Free Video Solution on Doubtnut
21	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 13** By using properties of determinants. Show that: $\begin{vmatrix} 1 + a^2 - b^2 & 2ab \end{vmatrix}$ $-2b2ab1 - a^2$ $+ b^2 2a2b - 2a1$ $- a^2 - b^2 \end{vmatrix}$ $= (1 + a^2 + b^2)^3$ ▶ Watch Free Video Solution on Doubtnut
22	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 14** By using properties of determinants. Show that: $\begin{vmatrix} a^2 + 1 & abaca \text{ ˆ } 2 \end{vmatrix}$ $+ 1bacbc^2 + 1 \end{vmatrix}$ $= (1 + a^2 + b^2$ $+ b^2)$ ▶ Watch Free Video Solution on Doubtnut
23	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 15** Let A be a square matrix of order 3×3, then $|kA|$ is equal to (A) $k|A|$ (B) $k^2|A|$ (C) $K^3|A|$ (D) $3k \quad |A|$ ▶ Watch Free Video Solution on Doubtnut
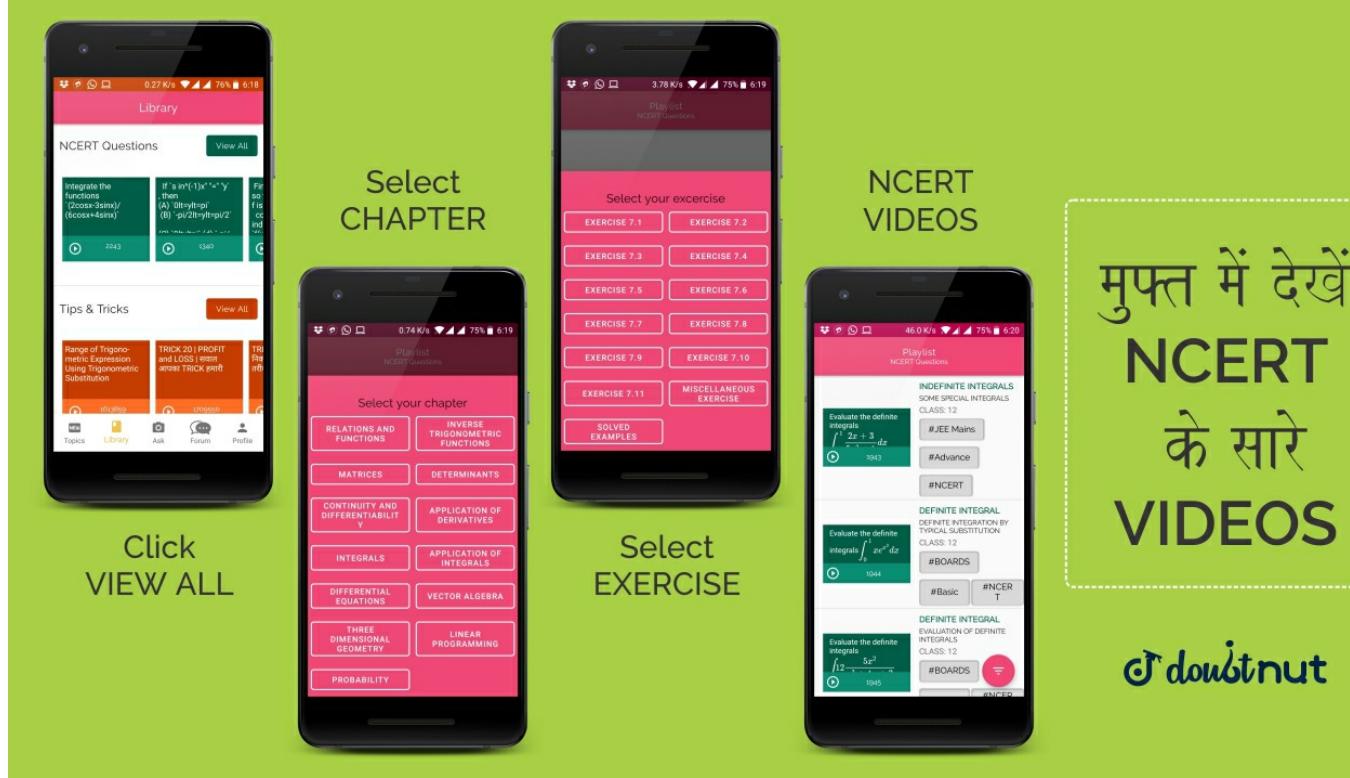
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.2 - Q 16

Which of the following is correct (A) Determinant is a square matrix. (B) Determinant is a number associated to a matrix. (C) Determinant is a number associated to a square matrix. (D) None of these

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.3 - Q 1

Find area of the triangle with vertices at the point given in each of the following : (i)
$(1, \quad 0), (6, \quad 0),$

$\quad (4, \quad 3)$
(ii)
$(2, \quad 7),$

$\quad (1, \quad 1),$
$(10, \quad 8)$
(iii)
$(-2, \quad -3),$

$\quad (3, \quad 2), \quad (-1,$

$\quad -8)$

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.3 - Q 2

Show that points
$A \quad (a, \quad b$

$+ \quad c)$

,
$B \quad (b, \quad c$

$+ \quad a)$

,
$C \quad (c, \quad a$

$+ \quad b)$
are collinear.

27	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.3 - Q 3** Find values of k if area of triangle is 4 sq. units and vertices are (ii) $(2, \quad 0),$ $(0, \quad 4),$ $(0, \quad k)$ ▶ Watch Free Video Solution on Doubtnut
28	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.3 - Q 4** (i) Find equation of line joining (1,2) and (3,6) using determinants, (ii) Find equation of line joining (3, 1) and (9,3) using determinants. ▶ Watch Free Video Solution on Doubtnut
29	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.3 - Q 5** If area of triangle is 35 sq units with vertices $(2, \quad - \quad 6),$ $(5, \quad 4) \quad and$ $(k, \quad 4)$. Then k is (A) 12 (B) -2 (C) 12, 2 (D) 12, 2 ▶ Watch Free Video Solution on Doubtnut
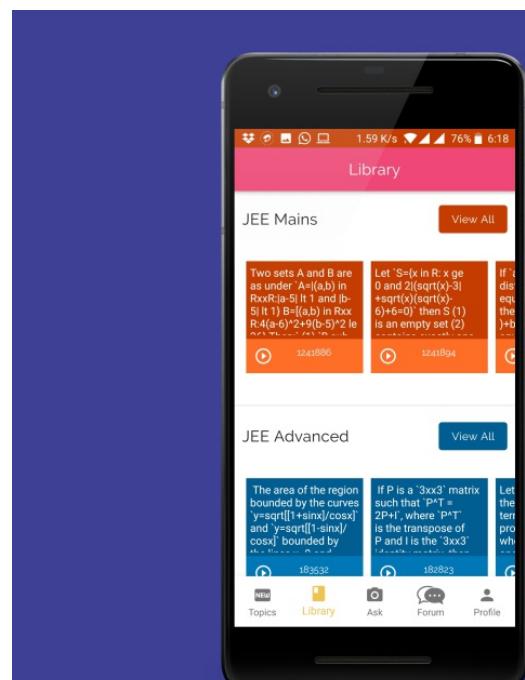
30	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.4 - Q 1** Write Minors and Cofactors of the elements of following determinants: (i) $\begin{vmatrix} 2 - 403 \end{vmatrix}$ (ii) $\begin{vmatrix} acbd \end{vmatrix}$ ▶ Watch Free Video Solution on Doubtnut

31	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.4 - Q 2** Write Minors and Cofactors of the elements of following determinants: (i) $\|100010001\|$ (ii) $\|10435 - 1012\|$ ▶
32	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.4 - Q 3** Using Cofactors of elements of second row, evaluate $\Delta = \|538201123\|$ ▶
33	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.4 - Q 4** Using Cofactors of elements of third column, evaluate Δ $= \|1xyz1yzx1zxy\|$ ▶
34	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.4 - Q 5** If $\Delta = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ and A_{ij} is cofactors of a_{ij}, then value of Δ is given by (A) $a_{11} + A_{31} + a_{12}A_{32}$ $+ a_{13}A_{33}$ (B) $a_{11}A_{11} + a_{12}A_{21}$ $+ a_{13}A_{31}$ (C) $a_{21}A_{11} + a_{22}A_{12}$ $+ a_{23}A_{13}$ (D) $a_{11}A_{11} + a_{21}A_{21}$ $+ a_{31}A_{31}$ ▶
35	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 1** Find adjoint of the matrice in $[1234]$ ▶

36	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 2** Find adjoint of the matrice in $[1 - 12235 - 201]$ ▶ Watch Free Video Solution on Doubtnut
37	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 3** Verify $A \quad (adj \quad A)$ $= \quad (adj \quad A) \quad A$ $\quad = \quad |A|\mathbf{I}$ $[23 - 4 - 6]$ ▶ Watch Free Video Solution on Doubtnut
38	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 4** Verify $A \quad (adj \quad A)$ $= \quad (adj \quad A) \quad A$ $\quad = \quad |A|\mathbf{I}$ ▶ Watch Free Video Solution on Doubtnut
39	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 5** Find the inverse the matrix (if it exists)given in $[2 - 243]$ ▶ Watch Free Video Solution on Doubtnut
40	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 6** Find the inverse the matrix (if it exists)given in $[-15 - 32]$

41	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 7** Find the inverse the matrix (if it exists)given in $[123024005]$

42	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 8** Find the inverse the matrix (if it exists)given in $\begin{bmatrix} 1 & 0 & 0 \\ 3 & 3 & 0 \\ 5 & 2 & -1 \end{bmatrix}$

43	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 9** Find the inverse the matrix (if it exists) given in $[2134-10-721]$

	NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 10 Find the inverse the matrix (if it exists)given in

44	$[1 - 1202 - 33$ $- 24]$
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45	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 11**
	Find the inverse the matrix (if it exists)given in $[0000 \cos \alpha \sin \alpha 0 \sin \alpha$ $- \cos \alpha]$
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46	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 12**
	Let $A = [3725]$ and $B = [6879]$. Verify that $(AB)^{-1} = B^{-1}A^{-1}$.
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47	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 13**
	If $A = [3112]$, show that $A^2 - 5A + 71 = 0$. Hence find A^{-1}.
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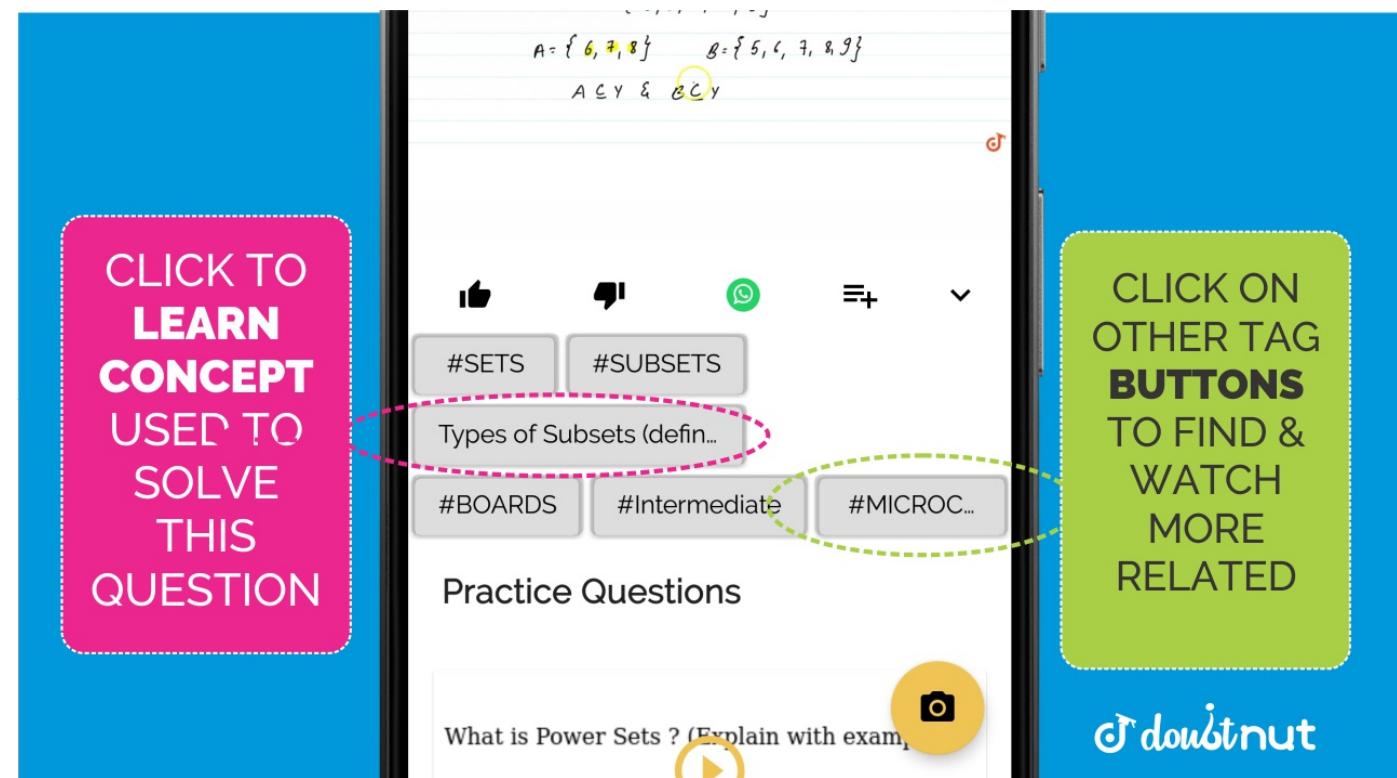
48	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 14**
	For the matrix A=$\begin{bmatrix} 3 & 2 \\ 1 & 1 \end{bmatrix}$, find the numbers a and b such that $A^2 + aA + bI = O$.
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| | **NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 15** |

|	
49	For the matrix $A = [11112 - 3213]$. Show that $A^3 - 6A^2 + 5A + 11I = 0$. Hence, find A^{-1} . ▶ Watch Free Video Solution on Doubtnut
50	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 16** If $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & 1 & 2 \end{bmatrix}$ .Verify that $A^3 - 6A^2 + 9A - 4I = 0$ and hence find A^{-1} . ▶ Watch Free Video Solution on Doubtnut
51	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 17** Let A be a non-singular square matrix of order 3 $\times$ 3. Then |adj A| is equal to (a) $\|A\|$ (B) $\|A\|^2$ (C) $\|A\|^3$ (D) $3\|A\|$ ▶ Watch Free Video Solution on Doubtnut
52	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.5 - Q 18** If A is an invertible matrix of order 2, then det $\left(A^{-1}\right)$ is equal to (a) det (A) (B) $\dfrac{1}{\det(A)}$ (C) 1 (D) 0 ▶ Watch Free Video Solution on Doubtnut
53	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 1** Examine the consistency of the system of equations $x + 2y = 2$ $2x + 3y = 3$ ▶ Watch Free Video Solution on Doubtnut
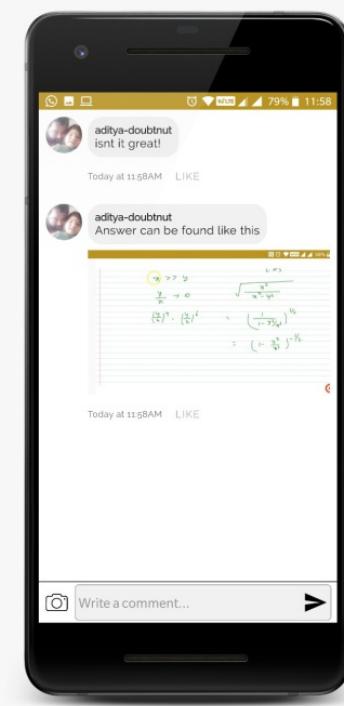
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 2

Examine the consistency of the system of equations

$$2x - y = 5$$
$$x + y = 4$$

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 3

Examine the consistency of the system of equations

$$x + 3y = 5$$
$$2x + 6y = 8$$

55

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 4

Examine the consistency of the system of equations

$$x + y + z = 1,$$
$$2x + 3y + 2z = 2,$$
$$ax + ay + 2a z = 4$$

56

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 5

Examine the consistency of the system of equations

57	$3x \quad y \quad 2z$ $= \quad 2$ $2y \quad z \quad = \quad 1 \, 3x \quad 5y \quad = \quad 3$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 6

Examine the consistency of the system of equations
$5xy \quad + \quad 4z$
$= \quad 5$
$2x \quad + \quad 3y$
$+ \quad 5z \quad = \quad 2$
$5x2y \quad + \quad 6z$
$= \quad 1$

58

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 7

Solve system of linear equations, using matrix method,
$5x \quad + \quad 2y$
$= \quad 4$
$7x \quad + \quad 3 \quad y$
$= \quad 5$

59
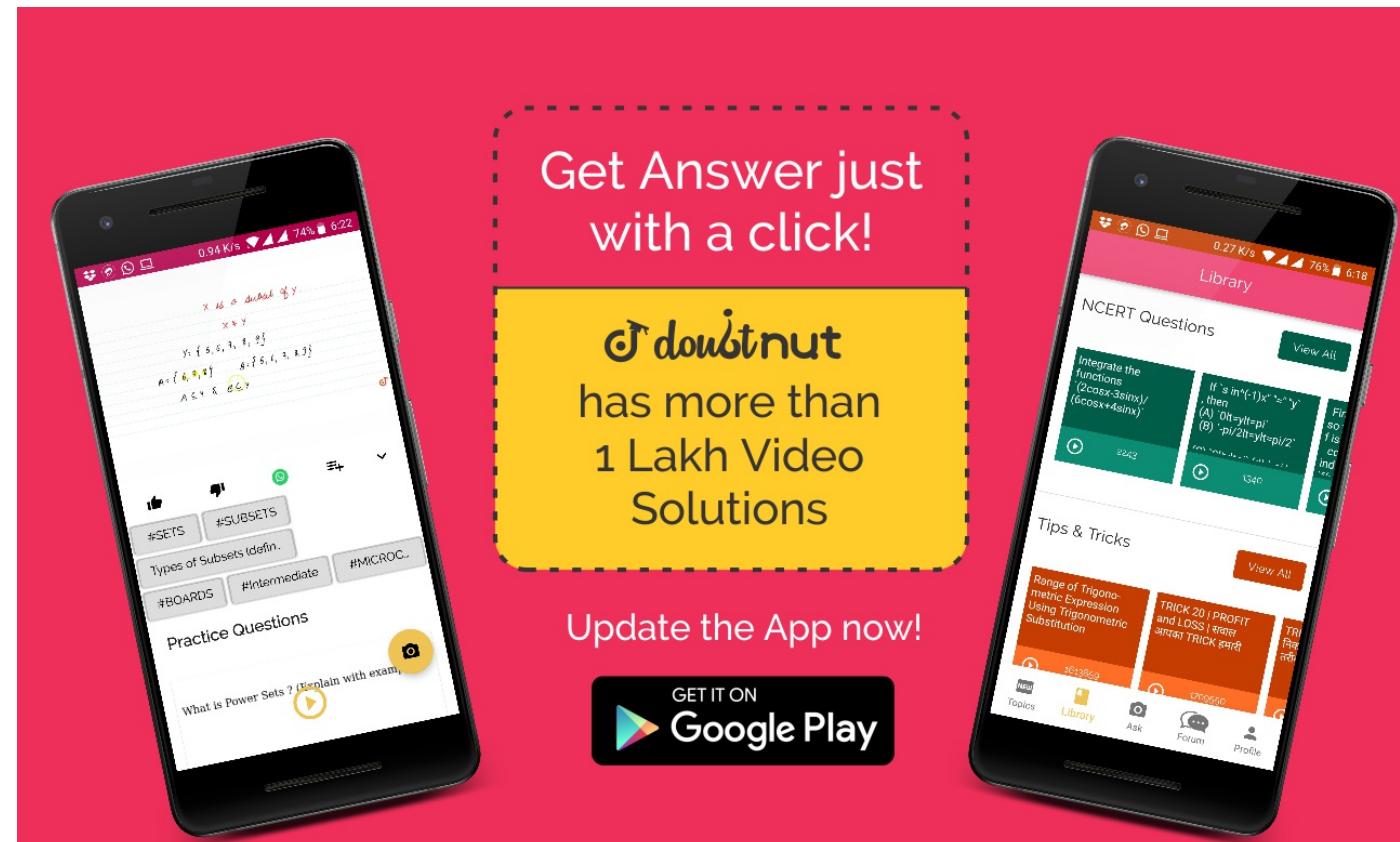
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 8

Solve system of linear equations, using matrix method,
$2. \, x \quad - \quad y$
$= \quad - \, 2$
$3x \quad + \quad 4y$
$= \quad 3$

60

|	
61	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 9** Solve system of linear equations, using matrix method, $4x \quad 3y \quad = \quad 3$ $3x \quad 5y \quad = \quad 7$
62	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 10** Solve system of linear equations, using matrix method, $5x \quad + \quad 2y$ $= \quad 3$ $3x \quad + \quad 2y$ $= \quad 5$
63	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 11** Solve system of linear equations, using matrix method, $2x + y + z = 1$ $x - 2y - z = \dfrac{3}{2} \ 3y - 5z = 9$
64	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 12** Solve system of linear equations, using matrix method, $x - y \quad + \quad z$ $= \quad 4$ $2x \quad + \quad y \quad 3z$ $= \quad 0$ $x \quad + \quad y$ $+ \quad z \quad = \quad 2$
65	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 13** Solve system of linear equations, using matrix method, $2x \quad + \quad 3y$ $+ 3z \quad = \quad 5$ $x - 2 \quad y \quad + \quad z$ $= -4$ $3x - y \quad 2z$ $= \quad 3$
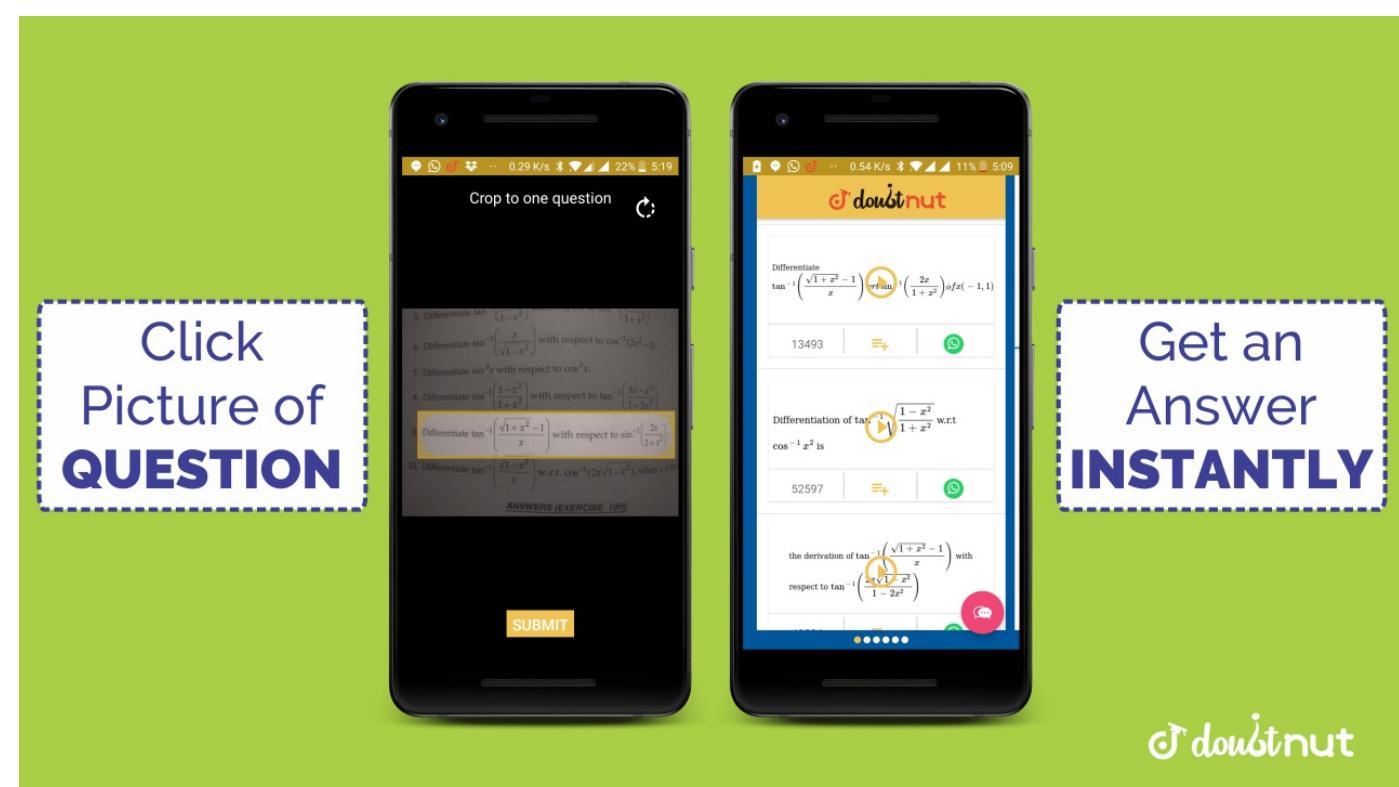
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 15

If
A
$$= \begin{pmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{pmatrix}$$
find A^{-1}. Use it to solve the system of equations $2x - 3y + 5z = 11$, $3x + 2y - 4z = -5$ and $x + y - 2z = -3$

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - EXERCISE 4.6 - Q 16

The cost of 4 kg onion, 3 kg wheat and 2 kg rice is Rs 60. The cost of 2 kg onion, 4 kg wheat and 6 kg rice is Rs 90. The cost of 6 kg onion 2 kg wheat and 3 kg rice is Rs 70. Find cost of each item per kg by matrix method.

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 1

Prove that the determinant
$[x \sin\theta \cos\theta - \sin\theta$
$- x1 \cos\theta 1x]$
is independent of 0.

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 2

Without expanding the determinant, prove that
$|aa^2bc \hat{\ } 2ca \hat{\ } 2ab|$
$= |1a^2a^31b^2b^31c^2c^3|$

70	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 3** Evaluate $\|\cos \alpha \cos \beta \cos \alpha \sin \beta$ $- \sin \alpha$ $- \sin \beta \cos \beta 0 \sin \alpha \cos \beta \sin \alpha \sin \beta \cos \alpha\|$
71	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 4** If a, b and c are real numbers, and $\Delta = \|b + + aa + bc$ $+ aa + + ca + +$ $+ a\| = 0$ .Show that either $a \quad + \quad b$ $+ \quad c \quad = \quad 0$ $\quad or \quad a \quad = \quad b$ $= \quad c$.
![doubtnut logo] पढ़ना हुआ आसान	
	NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 5 Solve the equation

72	$\|x + a \times \times + a \times$ $\times + a\| = 0$, $a \neq 0$
73	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 6** Prove that $\|a^2 bcac + c^2 a^2 + a$ $\hat{} \ 2aca \ \hat{} \ 2 + b \ \hat{} \ 2\|$ $= 4a^2 b^2 c^2$.
74	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 7** If $A^{-1} = [3 - 11$ $- 156 - 55 - 22]$ and $B = [12 - 2 - 1300$ $- 21]$, find $(AB)^{-1}$.
75	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 8** Let $A = [1 - 21$ $- 231115]$ verify that (i) $[adjA]^{-1}$ $= adj(A^{-1})$ (ii) $(A^{-1})^{-1} = A$
76	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 9** Evaluate $\|xyx + yyx + yxx$ $+ yxy\|$

.

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 10

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Evaluate $\begin{vmatrix} 1 & x & y \\ 1 & x+y & y \\ 1 & x & x+y \end{vmatrix}$
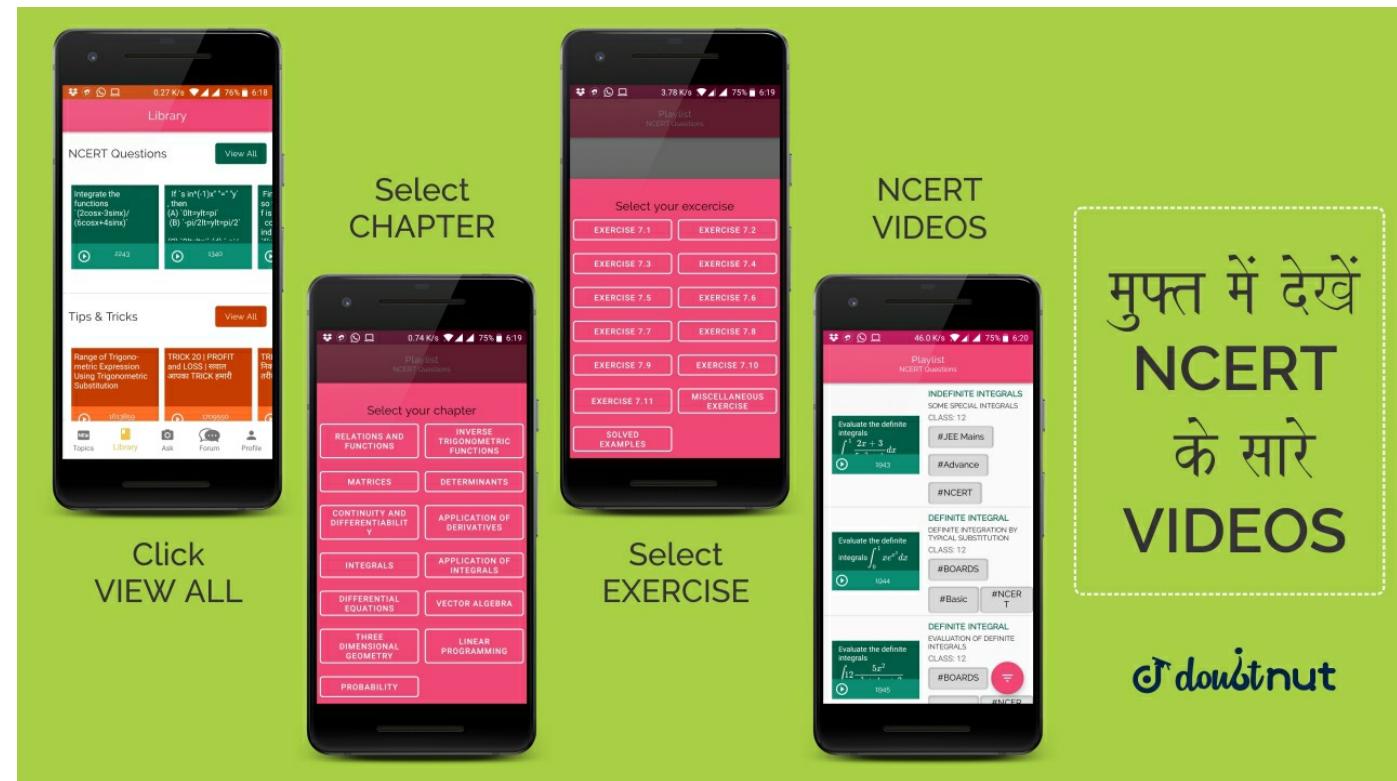
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 11

78

Using properties of determinants. Prove that
$\big|\alpha\alpha^2\beta + \gamma\rho\rho^2\gamma$

$+ \alpha\gamma\gamma^2\alpha + \beta\big|$
$= (\rho - \gamma)(\gamma - \alpha)(\alpha$
$- \rho)(\alpha + \rho + \gamma)$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 12

79

Using properties of determinants. Prove that
$\big|xx^21 + px^3yy^21$

$+ py^3zz^21 + pz^3\big|$
$= (1 + pxyz)(x$
$- y)(y - z)(z - x)$
, where p is any scalar.

80	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 13** Using properties of determinants. Prove that $\|3a - a + b - a + c$ $- b + a\,3b - b + c$ $- c + a - c + b\,3c\|$ $= 3(a + b + c)(ab$ $+ bc + ca)$ ▶ Watch Free Video Solution on Doubtnut
81	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 14** Using properties of determinants. Prove that $\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 4+3p+2q \\ 3 & 6+3p & 10+6p+3q \end{vmatrix}$ $= 1$ ▶ Watch Free Video Solution on Doubtnut
82	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 15** Using properties of determinants. Prove that $\|\sin \alpha \cos \alpha \cos(\alpha$ $+ \delta)\sin \beta \cos \beta \cos(\beta$ $+ \delta)\sin \gamma \cos \gamma \cos(\gamma$ $+ \delta)\| = 0$ ▶ Watch Free Video Solution on Doubtnut
83	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 16** Solve the system of equations $\dfrac{2}{x} + \dfrac{3}{y} + \dfrac{10}{z} = 4$ $\dfrac{4}{x} - \dfrac{6}{y} + \dfrac{5}{z} = 1$ $\dfrac{6}{x} + \dfrac{9}{y} - \dfrac{20}{z} = 2$ ▶ Watch Free Video Solution on Doubtnut

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 17

If a, b, c, are in A.P, then the determinant
$$\begin{vmatrix} x+2 & x+3 & x+2a \\ x+3 & x+4 & x+2b \\ x+4 & x+5 & x+2c \end{vmatrix}$$
is (A) 0 (B) 1 (C) x (D) 2x

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 18

If x, y, z are nonzero real numbers, then the inverse of matrix $A = \begin{bmatrix} x & 0 & 0 \\ 0 & y & 0 \\ 0 & 0 & z \end{bmatrix}$ is

(A)
$$\begin{bmatrix} x^{-1} & 0 & 0 \\ 0 & y^{-1} & 0 \\ 0 & 0 & z^{-1} \end{bmatrix}$$

(B)
$$xyz \begin{bmatrix} x^{-1} & 0 & 0 \\ 0 & y^{-1} & 0 \\ 0 & 0 & z^{-1} \end{bmatrix}$$

(C) $\dfrac{1}{xyz} \begin{bmatrix} x & 0 & 0 \\ 0 & y & 0 \\ 0 & 0 & z \end{bmatrix}$ (D) $\dfrac{1}{xyz} \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

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NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - MISCELLANEOUS EXERCISE - Q 19

Let
$$A = \begin{bmatrix} 1 & \sin\theta & 1 \\ -\sin\theta & 1 & \sin\theta \\ -1 & -\sin\theta & 1 \end{bmatrix}$$

, where $0 \le \theta \le 2\pi$. Then (A) $Det(A) = 0$ (B) $Det(A) \in (2, \infty)$ (C) $Det(A) \in (2, \quad 4)$ (D) $Det(A) \in [2, \quad 4]$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 1

87

Evaluate $|24 - 12|$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 2

88

Evaluate $| \times + 1 x - 1 x|$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 3

89

Evaluate the determinant $\Delta = |124 - 130410|$
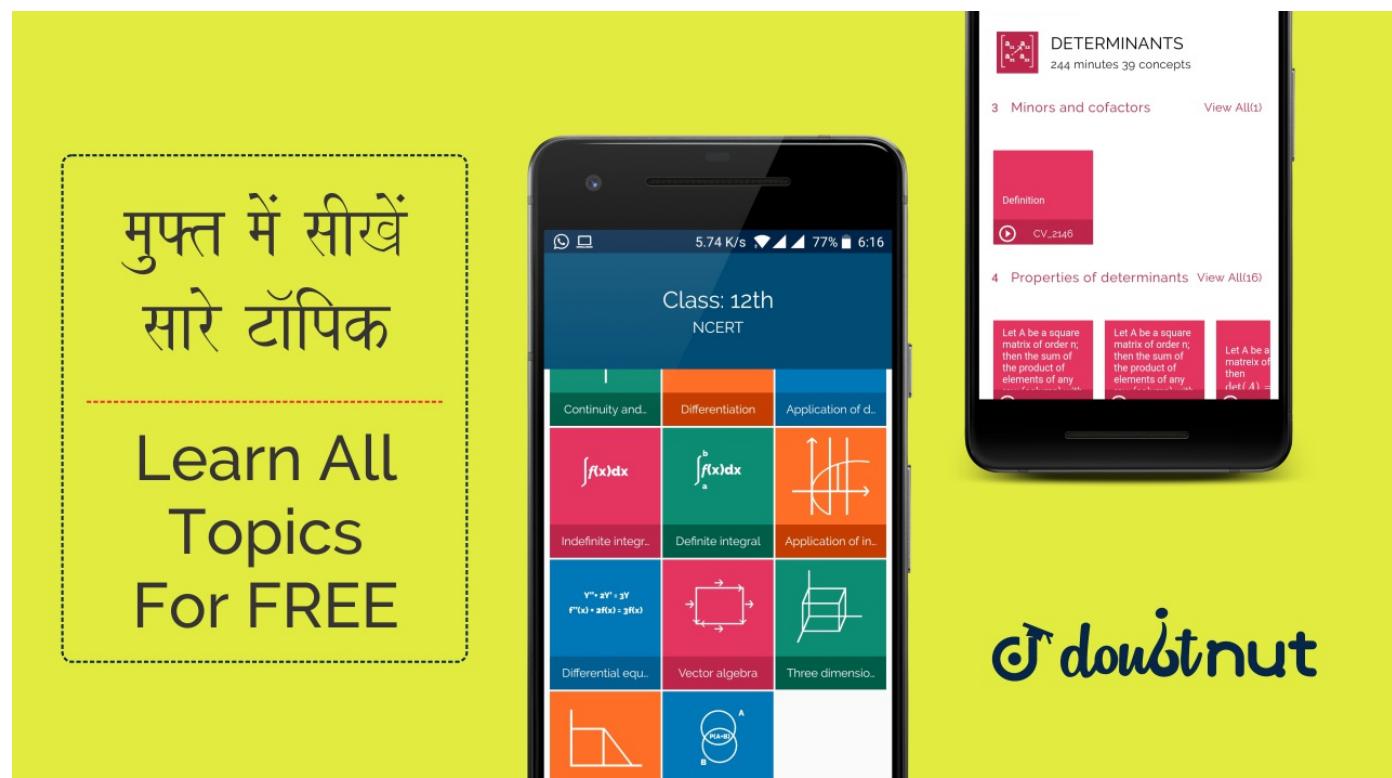
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 4

90

Evaluate
$\Delta = |0 \sin \alpha - \cos \alpha$
$- \sin \alpha 0 \sin \beta \cos \alpha$
$- \sin \beta 0|$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 5

Find values of x for which $|3 \times 1| = |3241|$

91	
92	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 6** Verify Property 1 for $\Delta = \begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$
93	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 7** Verify Property 2 for $\Delta = \begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$
94	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 8** Evaluate $\Delta = \begin{vmatrix} 3 & 2 & 3 \\ 2 & 2 & 3 \\ 3 & 2 & 3 \end{vmatrix}$
95	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 9** Write the value of the following determinant: $\begin{vmatrix} 102 & 18 & 36 \\ 1 & 3 & 4 \\ 17 & 3 & 6 \end{vmatrix}$
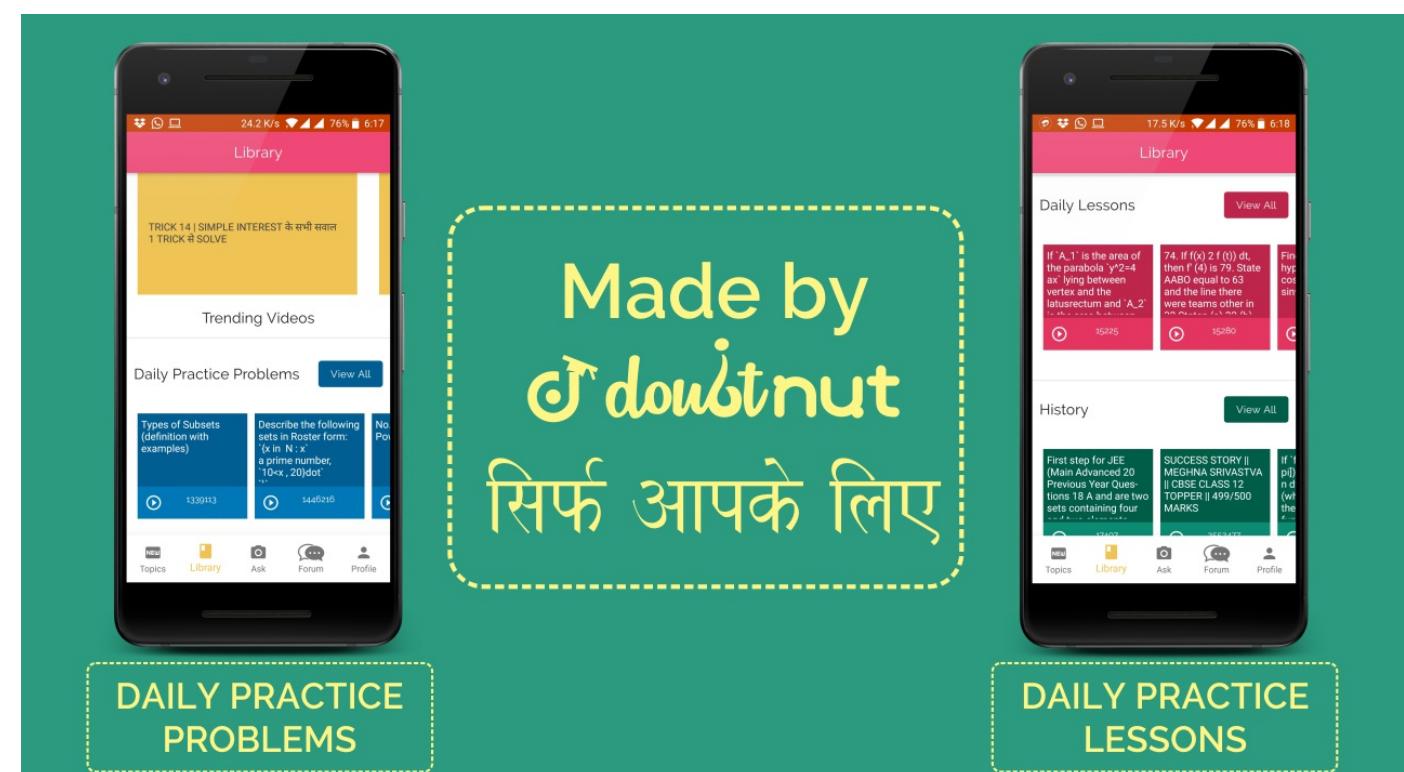
96	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 10** Show that $\|abca + 2xb + 2yc$ $+ 2zxyz\| = 0$ ▶ Watch Free Video Solution on Doubtnut
97	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 11** Prove that $\|aa + ba + b$ $+ c2a3a + 2B4a$ $+ 3b + 2c3a6a$ $+ 3b10a + 6b + 3c\|$ $= a^3$ ▶ Watch Free Video Solution on Doubtnut
98	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 12** Without expanding, prove that $\Delta = \|x + yy + zz$ $+ xzxy111\| = 0$ ▶ Watch Free Video Solution on Doubtnut
99	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 13** Evaluate $\Delta = \|1abc1bca1cab\|$ ▶ Watch Free Video Solution on Doubtnut
100	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 14** Prove that $\|b + caabc + ab$a $+ b\| = 4abc$ ▶ Watch Free Video Solution on Doubtnut
101	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 15** If x, y, z are different and

$$\Delta = \begin{vmatrix} \times^2 & 1 \end{vmatrix}$$
$$+ x^3 yy^2 1 + y^3 zz^2 1$$
$$+ z^3 \Big| = 0$$
, then
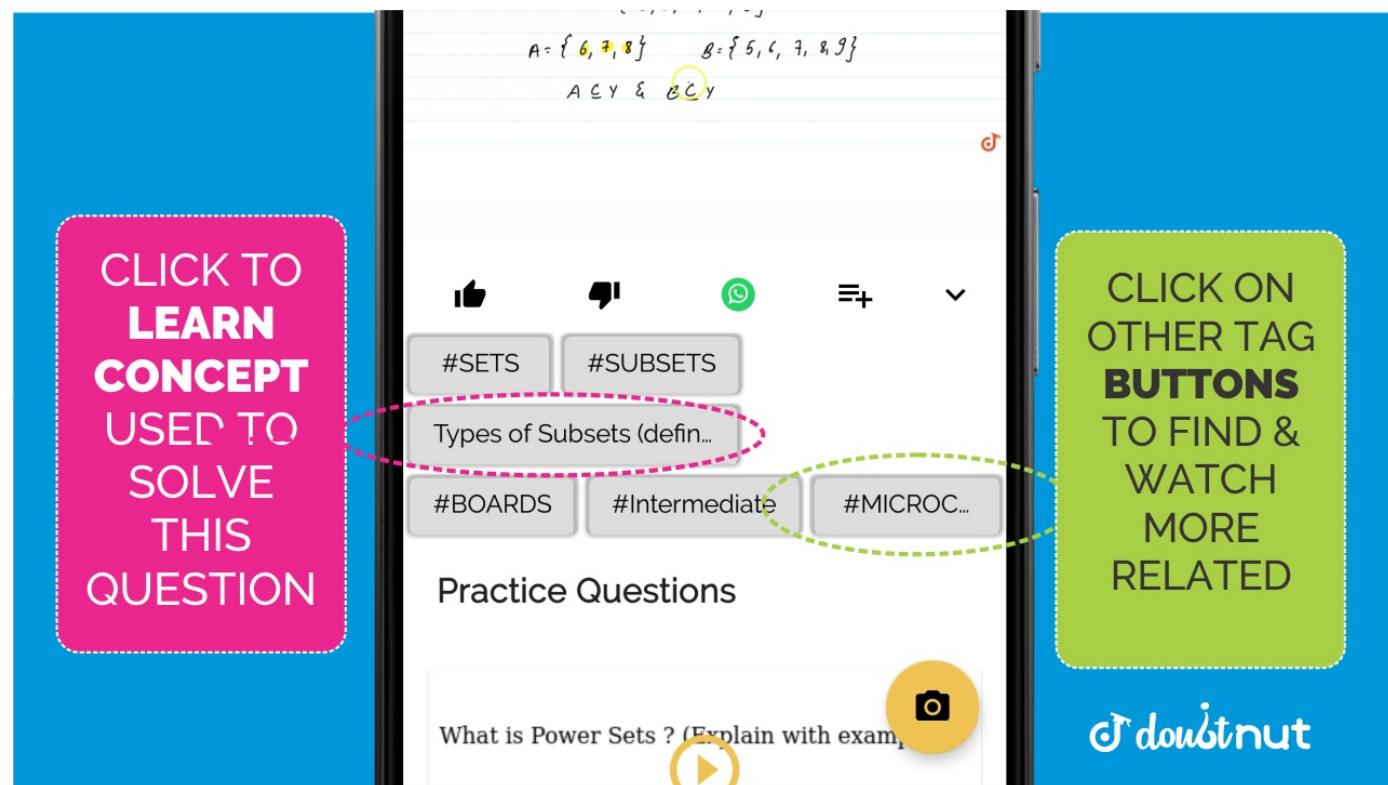
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 16

102

Show that
$$\begin{vmatrix} 1 + a1111 + b1111 \end{vmatrix}$$
$$+ c \Big| = abc \left(1 + \frac{1}{a} \right.$$
$$\left. + \frac{1}{b} + \frac{1}{c} \right) = abc$$
$$+ bc + ca + ab$$

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 17

103

Find the area of the triangle whose vertices are $(3, \quad 8)$,$(-4, \quad 2)$ and $(5, \quad 1)$.

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 18

Find the equation of the line joining A(1,3) and B (0,0) using determinants and find k if

104	D(k, 0) is a point such that area of triangle ABD is 3sq units.
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105	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 19** Find the minor of element 6 in the determinant $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$ ▶ Watch Free Video Solution on Doubtnut
106	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 20** Find minors and cofactors of all the elements of the determinant $\begin{vmatrix} 1 & -2 \\ 4 & 3 \end{vmatrix}$ ▶ Watch Free Video Solution on Doubtnut
107	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 21** Find minors and cofactors of the elements $a_{11},\quad a_{21}$ in the determinant $$\Delta = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{23} \end{vmatrix}$$ ▶ Watch Free Video Solution on Doubtnut

| 108 | **NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 22**

Find minors and cofactors of the elements of the determinant $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$ and verify that
$$a_{11}A_{31} + a_{12}A_{32} + a_{13}A_{33} = 0$$ |

109	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 23** Find adj for $A = [2314]$
110	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 24** If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$,then verify that $A \quad adj \quad A = |A| \ I$. Also find A^{-1} .
111	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 25** If $A = [231 - 4]$ and $B = [1 - 2 - 13]$, then verify that $(AB)^{-1} = B^{-1}A^{-1}$
112	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 26** Show that the matrix $A = [2312]$ satisfies the equation $A^2 - 4A + I = 0$
113	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 27** Solve the system of equations $2x \quad + \quad 5y$ $= \quad 1$ and $3x \quad + \quad 2y$ $= \quad 7$
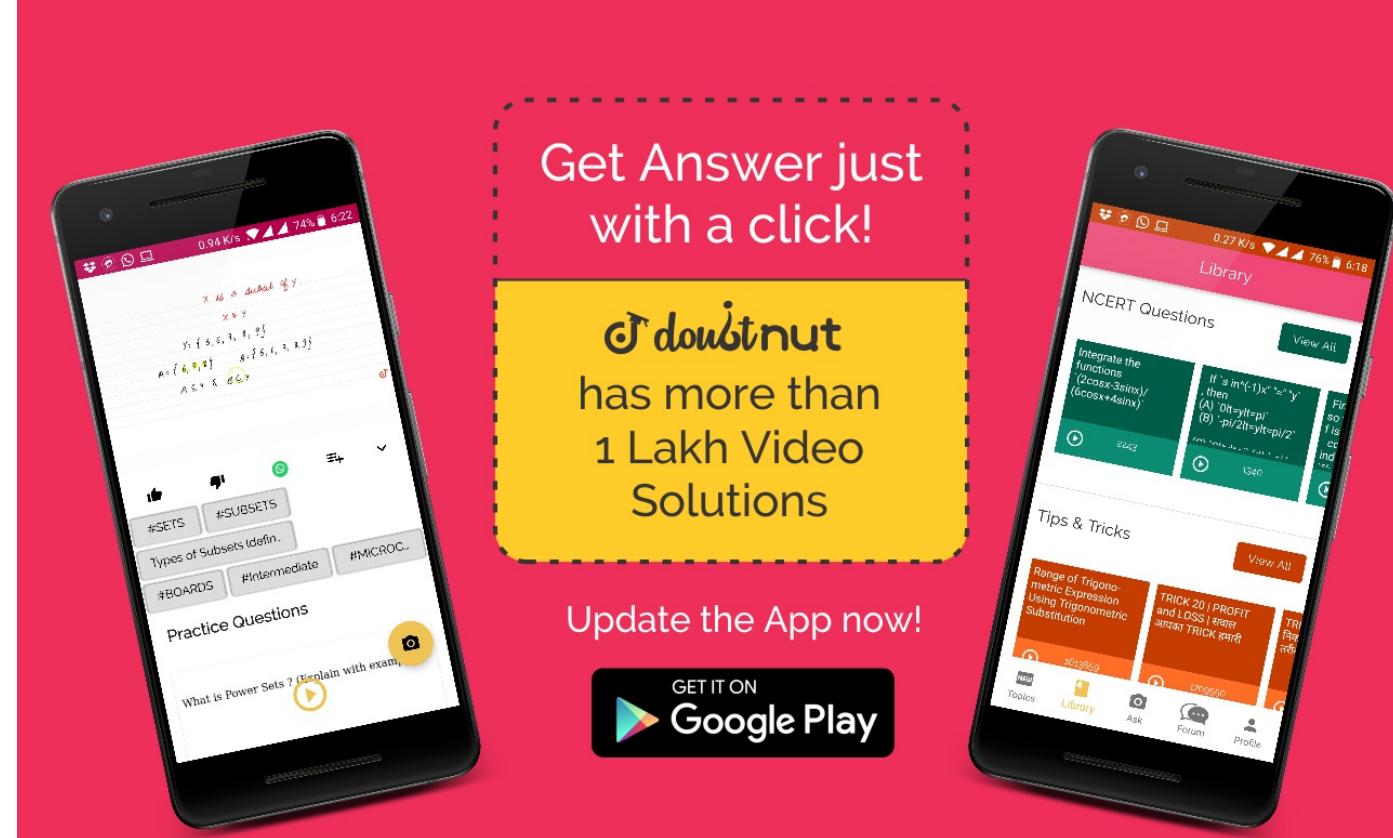
NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 28

Solve the following system of equations by matrix method.

$3x2y + 3z$

$= 8$

$2x + y - z$

$= 1$

$4x - 3; y$

$+ 2z = 4$

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114

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 29

The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent it algebraically and find the numbers using matrix method.

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115

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 30

If a, b, c are positive and unequal, show that value of the determinant $\Delta = |abcbcacab|$ is negative.

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116

NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 31

If a, b, c, are in A.P, find value of

$|ay + 45y + 78y$

$+ a3y + 56y + 89y$

$+ b4y + 67y + 910y$

$+ c|$

117

118	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 32** Show that $\Delta = \begin{vmatrix} (y+z)^2 & xy & zx \\ xy & (x+z)^2 & yz \\ xz & yz & (x+y)^2 \end{vmatrix} = 2xyz(x+y+z)^3$.
119	**NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 33** Use product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}\begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations $x - y + 2z = 1$ $2y - 3z = 1$ $3x - 2y + 4z = 2$
	NCERT - CLASS 12 - CHAPTER 4 DETERMINANTS - SOLVED EXAMPLES - Q 34 Prove that
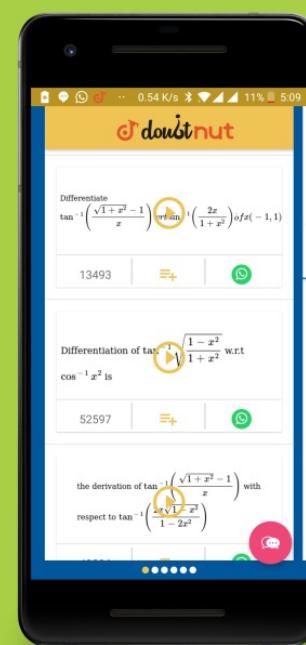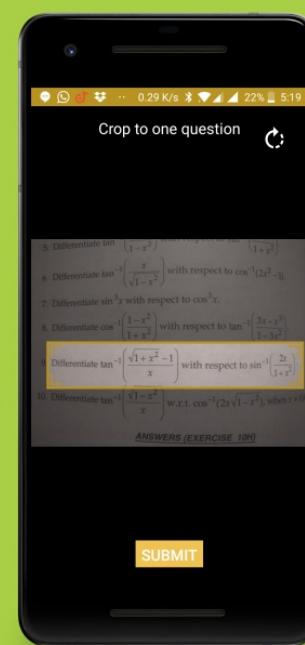
| 120 | $\Delta = [a + bxc + dxp$
 $+ qxax + bcx$
 $+ dpx + quvw]$
 $= (1$
 $- x^2)|acpbdqucw|$

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