Ques No.	Question
1	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 1** In the matrix A $=$ $$\begin{bmatrix} 2 & 5 & 19 & 7 \\ 35 & -2 & \frac{5}{2} & 12 \\ \sqrt{3} & 1 & -5 & 17 \end{bmatrix}$$, write: (i) The order of the matrix, (ii) The number of elements, (iii) Write the elements $a_{13}, a_{21}, a_{33}, a_{24}, a_{23}$. Watch Free Video Solution on Doubtnut
2	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 2** If a matrix has 24 elements, what are the possible orders it can have? What, if it has 13 elements? Watch Free Video Solution on Doubtnut
3	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 3** If a matrix has 18 elements, what are the possible orders it can have? What, if it has 5 elements? Watch Free Video Solution on Doubtnut
4	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 4** Construct a 2×2 matrix, $A = \begin{bmatrix} a_{ij} \end{bmatrix}$, whose elements are given by: (i) $a_{ij} = \frac{(i+j)^2}{2}$ (ii) $a_{ij} = \frac{i}{j}$ (iii) $a_{ij} = \frac{(i+2j)^2}{2}$ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 5 Construct a 3×4 matrix, whose elements are given by: (i)

5	$a_{ij} = \frac{1}{2}\lvert -3i + j \rvert$ (ii) $a_{ij} = 2i - j$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 6

Find the values of x, y and z from the following equations: (i) $[43x5] = [yz15]$ (ii) $[x + y35 + zxy]$

$= [6258]$

(iii)

$[x + y + zx + zy$

$+ z] = [957]$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 7

Find the value of a, b, c and d from the equation:

$[a - b2a + c2a$

$- b3c + d]$

$= [-15013]$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 8

$A = \left([a_{ij}] \right)_{m \times n}$ is a square matrix, if (a) $m < n$ (b) $m > n$ (c) $m = n$ (d) None of these

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 9

9	Which of the given values of x and y make the following pair of matrices equal $\begin{bmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{bmatrix}$, $\begin{bmatrix} 0 & y-2 \\ 8 & 4 \end{bmatrix}$ (a) $x = \dfrac{-1}{3}, y = 7$ (b) Not possible to find (c) $y = 7, x = \dfrac{-2}{3}$ (d) $x = \dfrac{-1}{3}, y = \dfrac{-2}{3}$ ▶ Watch Free Video Solution on Doubtnut
10	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.1 - Q 10** The number of all possible matrices of order 3×3 with each entry 0 or 1 is: (a) 27 (b) 18 (c) 81 (d) 512 ▶ Watch Free Video Solution on Doubtnut
11	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 1** Let $A = \begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 \\ -2 & 5 \end{bmatrix}, C = \begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$ Find each of the following: (i) $A + B$ (ii) $A - B$ (iii) $3A - C$ (iv) AB (v) BA ▶ Watch Free Video Solution on Doubtnut

12	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 2** Compute the following: (i) $\begin{bmatrix} ab & -ba \end{bmatrix} + \begin{bmatrix} a & \mathbf{a} \end{bmatrix}$ (ii) $$\begin{bmatrix} a^2 + b^2 & b^2 + c^2 a^2 \\ + c^2 a^2 & + b^2 \end{bmatrix}$$ $$+ \begin{bmatrix} 2ab & 2bc & -2ac \\ -2ab \end{bmatrix}$$ (iii) $$\begin{bmatrix} -14 & -68516285 \end{bmatrix}$$ $$+ \begin{bmatrix} 1276805324 \end{bmatrix}$$ (iv) $$\begin{bmatrix} \cos^2 x & \sin^2 x & \sin^2 x & \cos^2 x \end{bmatrix}$$ $$+$$ $$\begin{bmatrix} \sin^2 x & \cos^2 x & \cos^2 x & \sin^2 x \end{bmatrix}$$ ▶ Watch Free Video Solution on Doubtnut
13	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 3** Compute the indicated products. (i) $\begin{bmatrix} ab & -ba \end{bmatrix}\begin{bmatrix} a & -\mathbf{a} \end{bmatrix}$ (ii) $\begin{bmatrix} 123 \end{bmatrix}\begin{bmatrix} 234 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & -223 \end{bmatrix}$ $\begin{bmatrix} 123231 \end{bmatrix}$ (iv) $$\begin{bmatrix} 234345456 \end{bmatrix}\begin{bmatrix} 1 \\ -35024305 \end{bmatrix}$$ (v) $\begin{bmatrix} 23 & -1121 \end{bmatrix}\begin{bmatrix} 101 & -121 \end{bmatrix}$ (vi) $\begin{bmatrix} 3 & -13102 \end{bmatrix}$ `[▶ Watch Free Video Solution on Doubtnut
14	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 4** If $$A = \begin{bmatrix} 12 & -35021 \\ -11 \end{bmatrix}, B$$ $$= \begin{bmatrix} 3 & -12425203 \end{bmatrix}$$ and $C = \begin{bmatrix} 4120321 & -23 \end{bmatrix}$, then compute $(A + B) \quad and$ $(B \quad C)$. Also, verify that $A \quad + \quad (B \quad C)$ $$= \quad (A$$ $$+ \quad B) \quad C$$.

15	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 5** If A $=$ $\begin{bmatrix} \frac{2}{3} & 1 & \frac{5}{3} & \frac{1}{3} & \frac{2}{3} & \frac{4}{3} & \frac{7}{3} & 2 & \frac{2}{3} \end{bmatrix}$ and B $=$ $\begin{bmatrix} \frac{2}{3} & \frac{2}{5} & 1 & \frac{1}{5} & \frac{2}{5} & \frac{4}{5} & \frac{7}{3} & \frac{6}{5} & \frac{2}{5} \end{bmatrix}$, then compute $3A \quad - \quad 5B$.
16	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 6** Simplify $\cos\theta[\cos\theta \,\sin\theta \,\sin\theta \,\cos\theta]$ $+ \sin\theta[\sin\theta$ $- \cos\theta \,\cos\theta \,\sin\theta]$
17	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 7** Find X and Y, if (i) $X + Y = [7025]$ and $X - Y = [3003]$ (ii) $2X + 3Y = [2340]$ and $3X + 2Y = [2 - 2$ $- 15]$

18	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 8** Find X, if $Y = [3214]$ and $2X + Y = [10 - 32]$ ▶ Watch Free Video Solution on Doubtnut
19	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 9** Find x and y, if $2[130x] + [y012]$ $= [5618]$ ▶ Watch Free Video Solution on Doubtnut
20	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 10** Solve the equation for x, y, z and t, if $2\begin{bmatrix} x & z \\ y & t \end{bmatrix}$ $+ 3\begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$ $= 3\begin{bmatrix} 3 & 5 \\ 4 & 6 \end{bmatrix}$ ▶ Watch Free Video Solution on Doubtnut
21	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 11** If $x[2, 3] + y[-1, 1]$ $= [10, 5]$, find the values of x and y.

22	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 12** Given $$3\begin{bmatrix} x & y \\ z & w \end{bmatrix}$$ $$= \begin{bmatrix} x & 6 \\ -1 & 2w \end{bmatrix}$$ $$+ \begin{bmatrix} 4 & x+y \\ z+w & 3 \end{bmatrix}$$, find the values of x, y, z and w.
23	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 13** If $$F(x) = [\cos x$$ $$- \sin x 0 \sin x \cos x 0 0 0 1$$ $$]$$, show that $$F(x) \quad F(y)$$ $$= \quad F(x \quad + \quad y)$$.
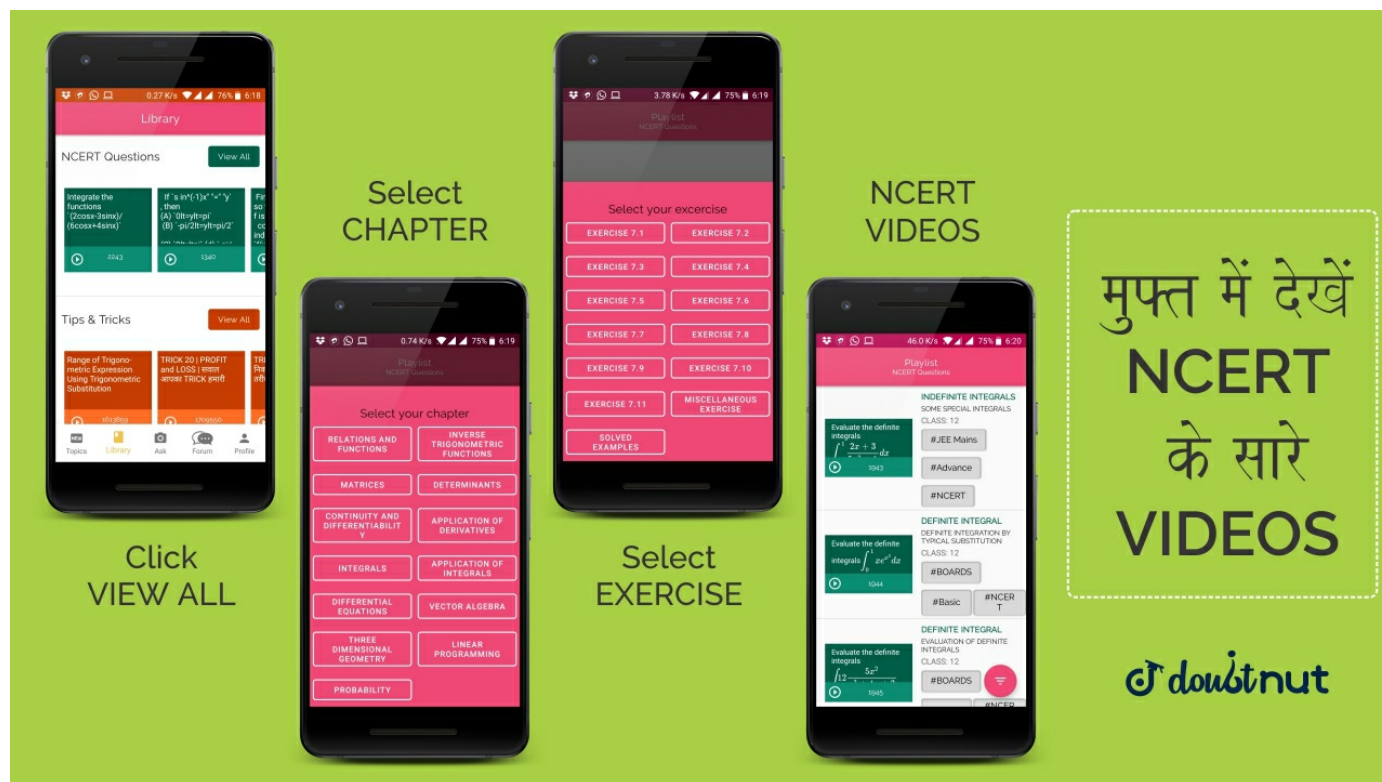
NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 14

Show that (i)
$$[5 - 167][2134]$$
$$\neq [2134][5 - 167]$$
(ii)

24	$[123010110][-1100$ $-11234]$ $\neq [-1100$ $-11234][123010110$ $]$ ▶ Watch Free Video Solution on Doubtnut
25	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 15** Find $A^2 - 5A + 6I$, if $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$ ▶ Watch Free Video Solution on Doubtnut
26	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 16** If $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$, prove that $A^3 - 6A^2 + 7A + 2I = 0$ ▶ Watch Free Video Solution on Doubtnut
27	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 17** If A $A = [3 - 24 - 2]$ and $I = [1001]$, find k so that $A^2 = kA - 2I$. ▶ Watch Free Video Solution on Doubtnut
28	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 18** If $A = \begin{bmatrix} 0 & -\tan\left(\frac{\alpha}{2}\right) \\ \tan\left(\frac{\alpha}{2}\right) & 0 \end{bmatrix} then (I - A) \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix} =$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 19

29

A trust fund has Rs 30,000 that must be invested in two different types of bonds. The first bond pays 5% interest per year, and the second bond pays 7% interest per year. Using matrix multiplication, determine how to divide Rs 30,000 among the two types of bonds. If the trust fund must obtain an annual total interest of: (a) Rs 1800 (b) Rs 2000

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 20

30

The bookshop of a particular school has 10 dozen chemistry books, 8 dozen physics books, 10 dozen economics books. Their selling prices are Rs 80, Rs 60 and Rs 40 each respectively. Find the total amount the bookshop will receive from selling all the books using matrix algebra.

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 21

31

Assume X, Y, Z, W and P are matrices of order $2 \times n$, $3 \times k$, $2 \times p$, $n \times 3$ and $p \times k$, respectively. Choose the correct answer The restriction on n, k and p so that $PY + WY$ will be defined are: (A) $k = 3, p = n$
(B) k is arbitrary ,p=2 (C) p is arbitray ,k=3 (D) k=2 , p=3

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.2 - Q 22

32

If $n = p$, then the order of the matrix $7X - 5Z$ is: (A) $p \times 2$ (B) $2 \times n$ (C) $n \times 3$ (D) $p \times n$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 1

Find the transpose of each of the following matrices: (i) $\left[5\dfrac{1}{2} \; -1 \right]$ (ii) $\left[1 - 123 \right]$ (iii) $\left[-156\sqrt{3}5623 - 1 \right]$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 2

If $A = \begin{bmatrix} -1 & 2 & 3 \\ 5 & 7 & 9 \\ -2 & 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -4 & 1 & -5 \\ 1 & 2 & 0 \\ 1 & 3 & 1 \end{bmatrix}$, then verify that (i)

$(A + B)' = A' + B'$

(ii)

$(A - B)' = A' - B'$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 3

If $A = \left[3 - 10421 \right]$ and $B = \left[-121123 \right]$, then verify that $(A + B)' = A' + B'$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 4

36	If $A' = [-2312]$ and $B = [-1012]$, then find $(A + 2B)'$.
37	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 5** For the matrices A and B, verify that $(AB)' = B'A'$, where (i) $A = [1 - 43]$, $B = [-121]$ (iii) $A = [012]$, $B = [157]$
38	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 6** If (i) $A = \begin{bmatrix} \cos\alpha & \sin\alpha \\ -\sin\alpha & \cos\alpha \end{bmatrix}$, then verify that $A'A = I$. (ii) $A = \begin{bmatrix} \sin\alpha & \cos\alpha \\ -\cos\alpha & \sin\alpha \end{bmatrix}$, then verify that $A'A = I$.
39	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 7** (i) Show that the matrix $A = [1 - 15 \ -121513]$ is a symmetric matrix. (ii) Show that the matrix $A = [01 - 1 - 1211 \ -10]$ is a skew symmetric matrix.
40	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 8** For the matrix $A = [1567]$, verify that. (i) $(A + A')$ is a symmetric matrix (ii) $(A - A')$ is a skew symmetric matrix
41	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 9** Find $\frac{1}{2}(A + A')$ and $\frac{1}{2}(A - A')$, when

$$A = [0ab - a0c - b - c0]$$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 10

Express the following matrices as the sum of a symmetric and a skew symmetric matrix: (i) $[351 - 1]$ (ii)
$$[6 - 22 - 23 - 12 - 13]$$
(iii)
$$[33 - 1 - 2 - 21452]$$
(iv) $[15 - 12]$

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 11

Choose the correct answer If A, B are symmetric matrices of same order, then AB – BA is a (A) Skew symmetric matrix   (B) Symmetric matrix (C) Zero matrix   (D) Identity matrix

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.3 - Q 12

If

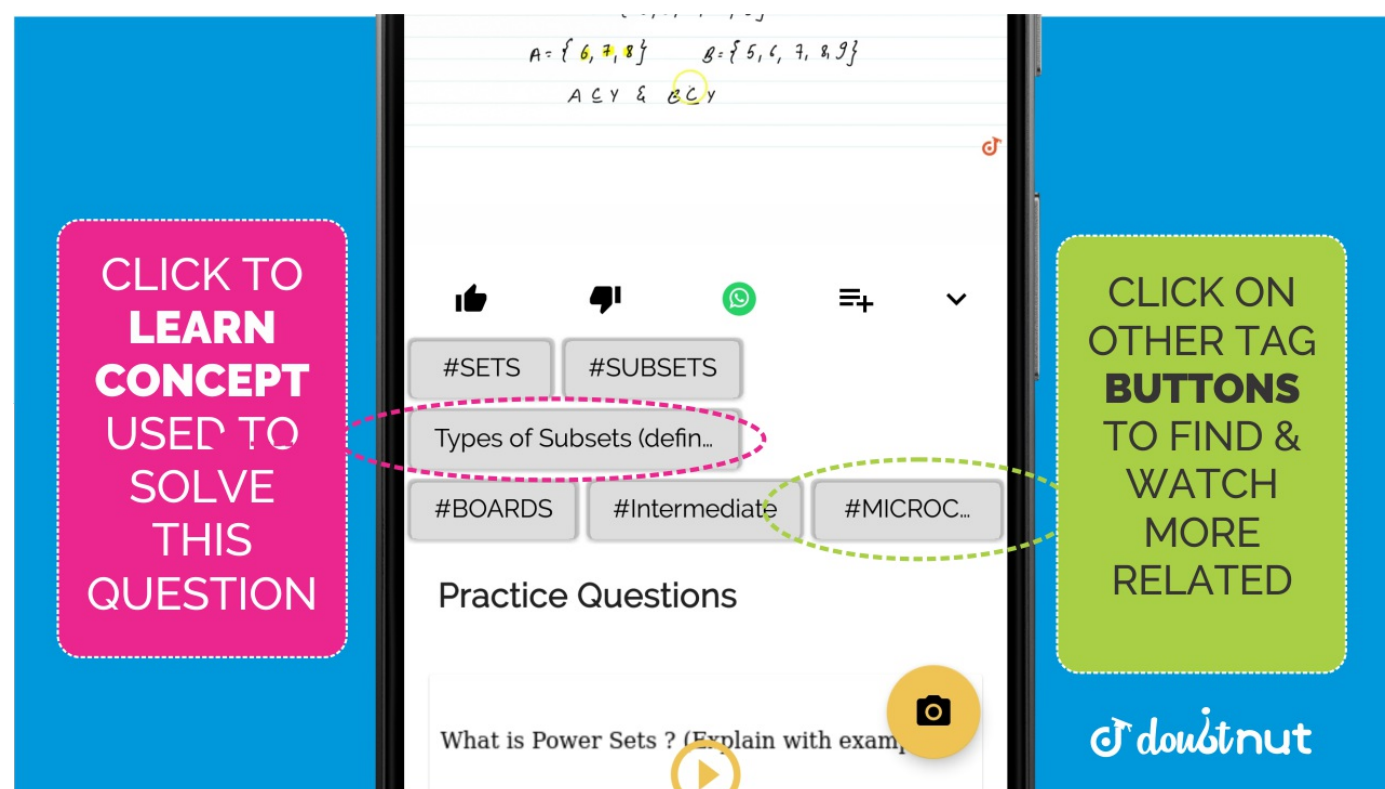| 44	$A = [\cos \alpha$ $-\sin \alpha \sin \alpha \cos \alpha]$, then $A + A' = I$, if the value of α is (A) $\dfrac{\pi}{6}$ (b) $\dfrac{\pi}{3}$ (c) π (d) $\dfrac{3\pi}{2}$ ▶ **Watch Free Video Solution on Doubtnut**
45	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 1** Using elementary transformations, find the inverse of the matrix $[1 - 123]$ ▶ **Watch Free Video Solution on Doubtnut**
46	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 2** Using elementary transformations, find the inverse of the matrix $[2111]$ ▶ **Watch Free Video Solution on Doubtnut**
47	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 3** Using elementary transformations, find the inverse of the matrix $[1327]$ ▶ **Watch Free Video Solution on Doubtnut**
48	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 4** Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$ ▶ **Watch Free Video Solution on Doubtnut**
	NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 5 Using elementary transformations, find the inverse of the matrix $[2174]$

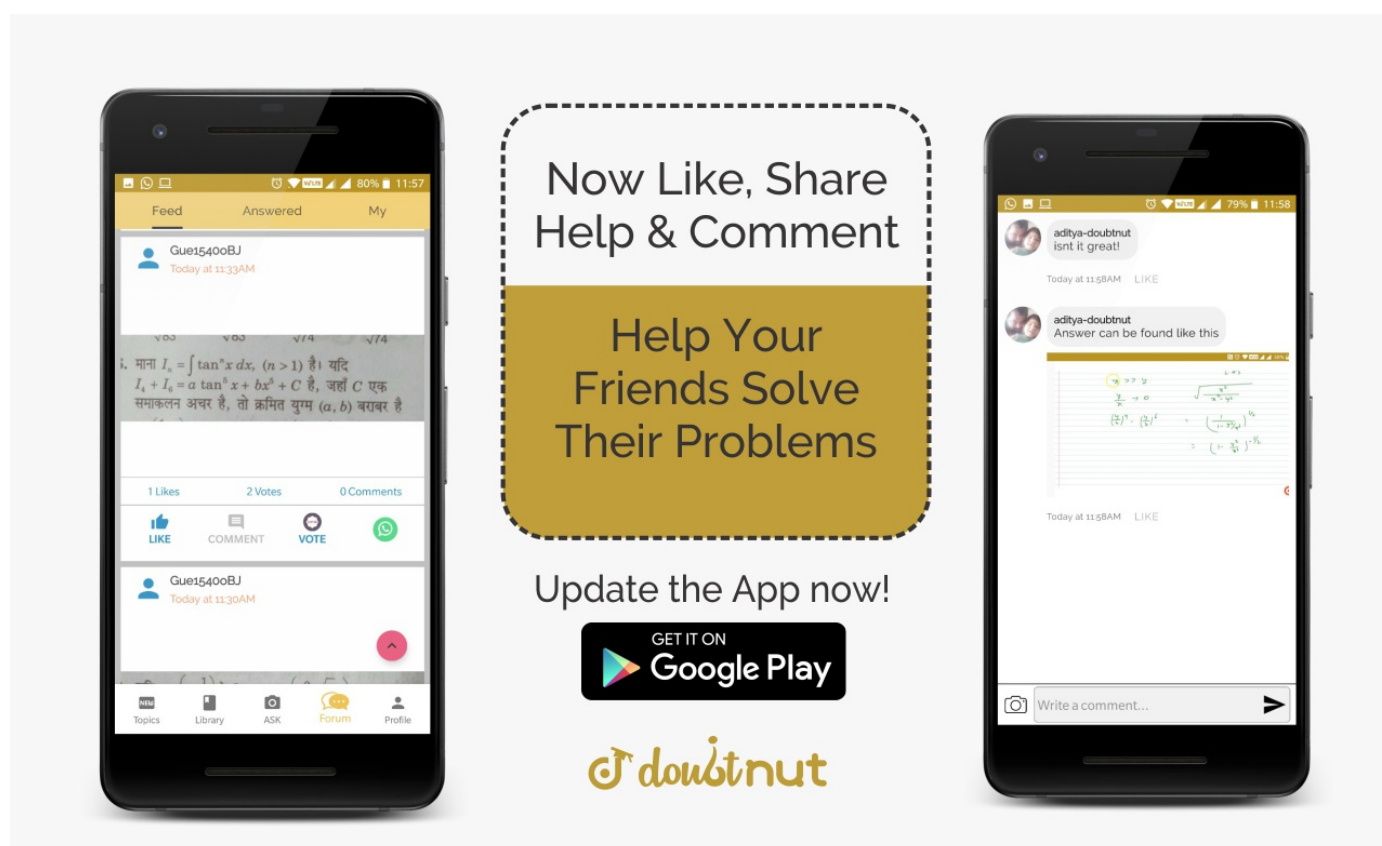| 49	
50	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 6** Using elementary transformations, find the inverse of the matrices $\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$
51	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 7** Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$
52	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 8** Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 4 & 5 \\ 3 & 4 \end{bmatrix}$
53	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 9** Using elementary transformations, find the inverse of each of the matrices $\begin{bmatrix} 3 & 10 \\ 2 & 7 \end{bmatrix}$
54	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 10** Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 3 & -1 \\ -4 & 2 \end{bmatrix}$

55	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 11** Using elementary transformations, find the inverse of each of the matrices $[2 - 61 - 2]$ ▶ Watch Free Video Solution on Doubtnut
56	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 12** Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 6 & -3 \\ -2 & 1 \end{bmatrix}$ ▶ Watch Free Video Solution on Doubtnut
57	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 13** Using elementary transformations, find the inverse of the matrix $[2 - 3 - 12]$ ▶ Watch Free Video Solution on Doubtnut
58	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 14** Using elementary transformations, find the inverse of the matrix $[2142]$ ▶ Watch Free Video Solution on Doubtnut
59	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 15** Using elementary transformations, find the inverse of the matrix $[2 - 332233 - 22]$ ▶ Watch Free Video Solution on Doubtnut

NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 16

| 60 | Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 13 & -2 & -30 \\ -5 & 2 & 50 \end{bmatrix}$
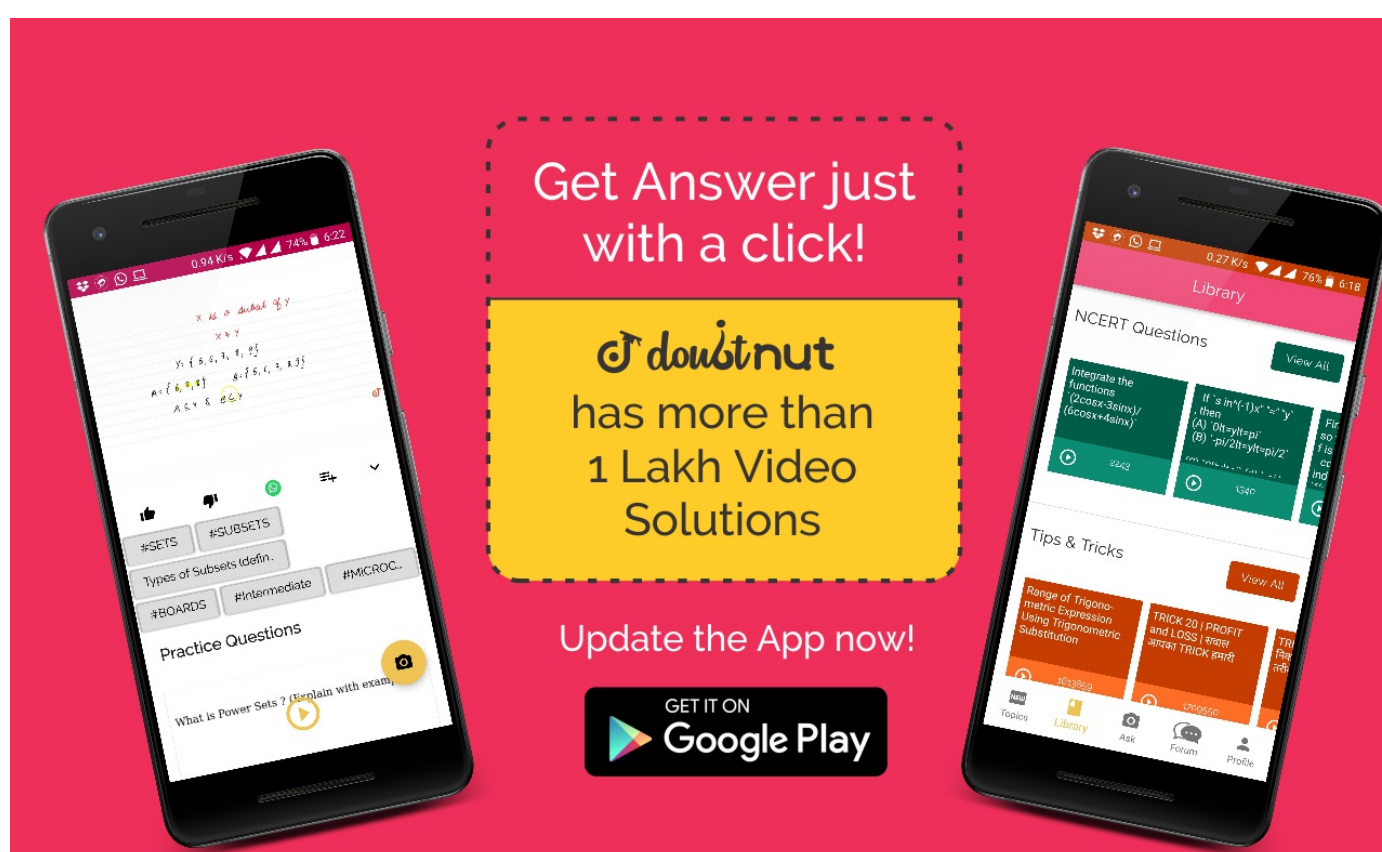
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| 61 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 17**

Using elementary transformations, find the inverse of the matrix $\begin{bmatrix} 20 & -15 \\ 100 & 13 \end{bmatrix}$

|

| 62 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - EXERCISE 3.4 - Q 18**

Matrices A and B will be inverse of each other only if (A) $AB = BA$ (B) $AB = BA = 0$
(C) $AB = 0, BA = I$
(D) $AB = BA = I$

|

| 63 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 1**

Let $A = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$ show that $(aI + bA)^n = a^n I + na^{n-1}bA$, where I is the identity matrix of order 2 and $n \in N$.

|

| 64 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 2**

If $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$, prove that $A^n = \begin{bmatrix} 3^{n-1} & 3^{n-1} & 3^{n-1} \\ 3^{n-1} & 3^{n-1} & 3^{n-1} \\ 3^{n-1} & 3^{n-1} & 3^{n-1} \end{bmatrix}, n \in N$.

|

| | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 3** |

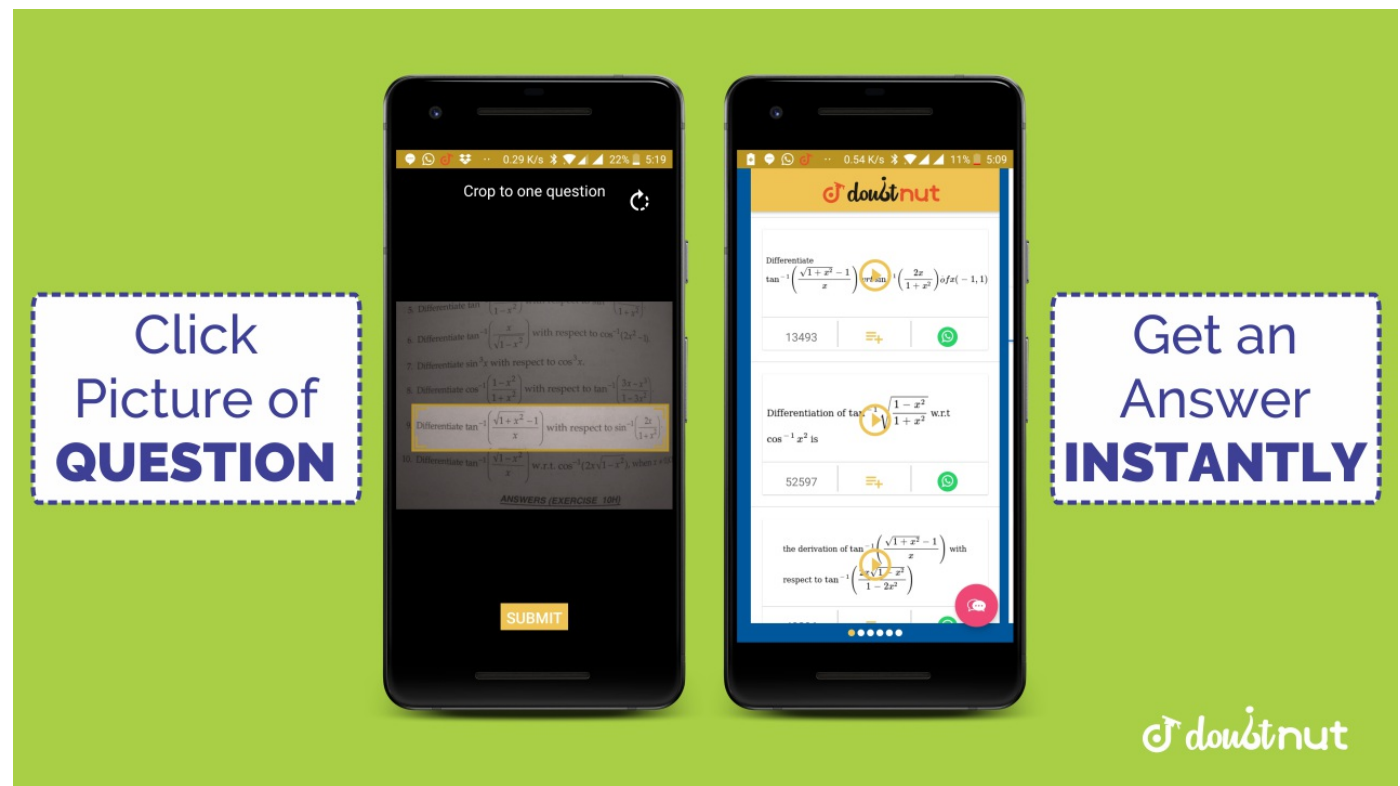|	
65	If $A = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$, then prove that $A^n = \begin{bmatrix} 1+2n & -4n \\ n & 1-2n \end{bmatrix}$, where n is any positive integer. ▶ Watch Free Video Solution on Doubtnut
66	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 4** If A and B are symmetric matrices, prove that AB – BA is a skew symmetric matrix. ▶ Watch Free Video Solution on Doubtnut
67	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 5** Show that the matrix B^, AB is symmetric or skew symmetric according as A is symmetric or skew symmetric. ▶ Watch Free Video Solution on Doubtnut
68	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 6** Find the values of x, y, z if the matrix $A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ satisfy the equation $A'A = I$. ▶ Watch Free Video Solution on Doubtnut

69	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 7** For what values of x $: [1 2 1] \begin{bmatrix} 1 2 0 \\ 2 0 1 \\ 1 0 2 \end{bmatrix}$ $[0 2 x] = 0$? ▶ Watch Free Video Solution on Doubtnut
70	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 8** If $A = [3 1 - 1 2]$, show that $A^2 - 5A + 7I = 0$ ▶ Watch Free Video Solution on Doubtnut
71	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 9** Find x, if $[x - 5 - 1] \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$ $\left] \right] \begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = O$. ▶ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 10 A manufacturer produces three products x, y, z which he sells in two markets. Annual sales are indicated below: Market Products I 10.000 2.000 18.000 II 6.000 20.000 8.000 (a) If unit sale prices of x, y

| 72	and z are Rs 2.50, Rs 1.50 and Rs 1.00, respectively, find the total revenue in each market with the help of matrix algebra. (b) If the unit costs of the above three commodities are Rs 2.00, Rs 1.00 and 50 paise respectively. Find the gross profit. ▶ Watch Free Video Solution on Doubtnut
73	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 11** Find the matrix X so that $X \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = \begin{bmatrix} -7 & -8 & -9 \\ 2 & 4 & 6 \end{bmatrix}$ ▶ Watch Free Video Solution on Doubtnut
74	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 12** If A and B are square matrices of the same order such that $AB = BA$, then prove by induction that $AB^n = B^n A$. Further, prove that $(AB)^n = A^n B^n$ for all $n \in N$. ▶ Watch Free Video Solution on Doubtnut
75	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 13** If $A = [\alpha \beta \gamma \alpha]$ is such that $A^2 - I$, then (A) $1 + \alpha^2 + \beta\gamma = 0$ (B) $1 - \alpha^2 + \beta\gamma = 0$ (C) $1 - \alpha^2 - \beta\gamma = 0$ (D) $1 + \alpha^2 - \beta\gamma = 0$ ▶ Watch Free Video Solution on Doubtnut
76	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 14** If the matrix A is both symmetric and skew symmetric, then (A) A is a diagonal matrix (B) A is a zero matrix (C) A is a square matrix (D) None of these ▶ Watch Free Video Solution on Doubtnut
77	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - MISCELLANEOUS EXERCISE - Q 15** If A is square matrix such that $A^2 = A$, then $(I + A)^3 - 7A$ is equal to (A) A (B) $I - A$ (C) I (D) 3A ▶ Watch Free Video Solution on Doubtnut
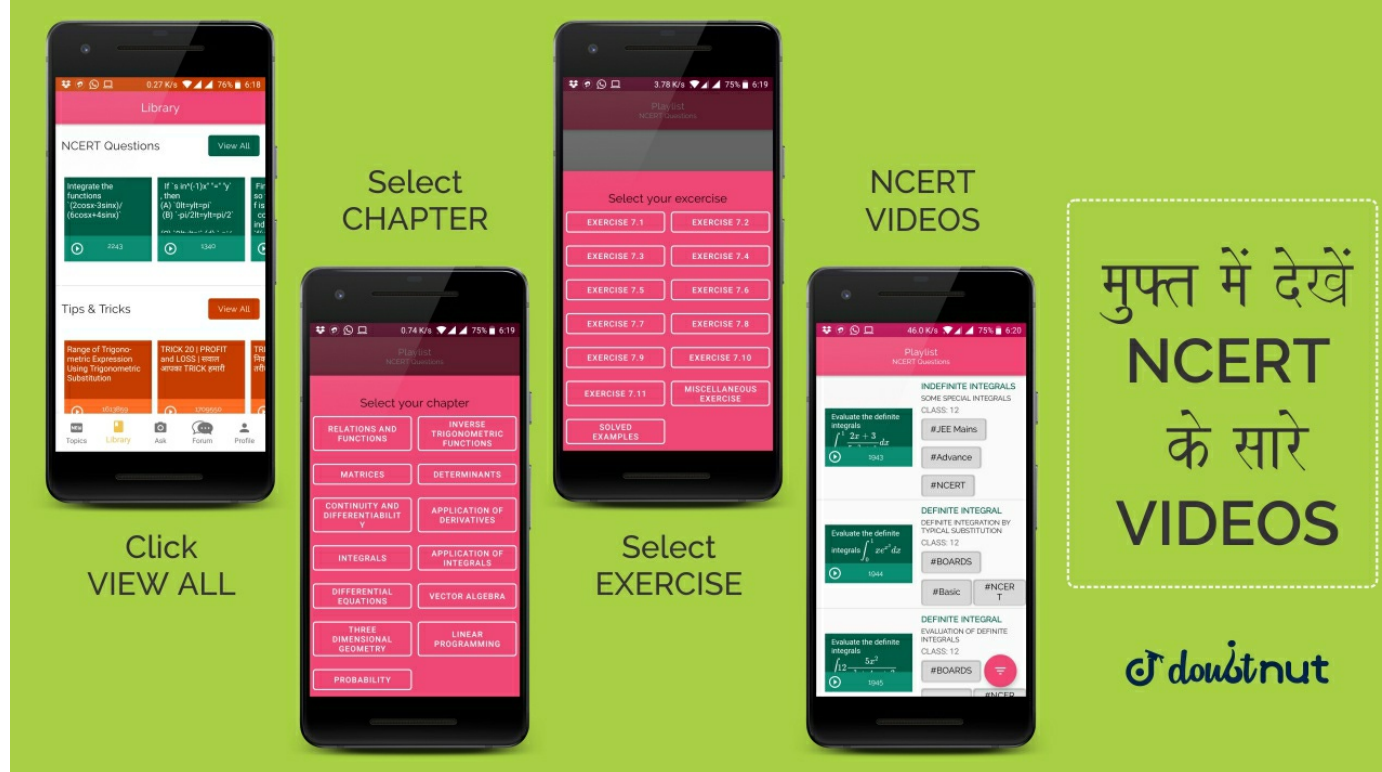
NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 1

Consider the following information regarding the number of men and women workers in three factories I, II and III. Men workers Women workers I 30 25 II 25 31 III 27 26 Represent the above information in the form of a 3×2 matrix. What does th

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NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 2

If a matrix has 8 elements, what are the possible orders it can have?

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NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 3

Construct a 3×2 matrix whose elements are given by $a_{ij} = \dfrac{1}{2}|i - 3j|$.

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

If
$$[x + 3z + 42y - 7$$
$$-6a - 10b - 3$$
$$-210] = [063y - 2$$
$$-6 - 32c + 22b$$
$$+4 - 210]$$
Find the values of a, b, c, x, y and z.

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NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 5

Find the values of a, b, c, and d from the following equation:

82	$[2a + ba - 2b5c$ $- d4c + 3d]$ $= [4 - 31124]$
	▶ Watch Free Video Solution on Doubtnut
83	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 6** Given $A = \begin{bmatrix} \sqrt{3} & 1 & -1 \\ 2 & 3 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & \sqrt{5} & 1 \\ -2 & 3 & \frac{1}{2} \end{bmatrix}$, find $A + B$. ▶ Watch Free Video Solution on Doubtnut

84	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 7** If $A - [122331]$ and $B - [3 - 1 - 1032]$, then find $2A - B$. ▶ Watch Free Video Solution on Doubtnut
85	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 8** If $A = [8430 - 26]$ and $B = [24 - 5 - 221]$, then find the matrix X, such that $2A + 3X = 5B$. ▶ Watch Free Video Solution on Doubtnut
86	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 9** Find X and Y, if $X + Y = [5209]$ and $X - Y = [360 - 1]$. ▶ Watch Free Video Solution on Doubtnut

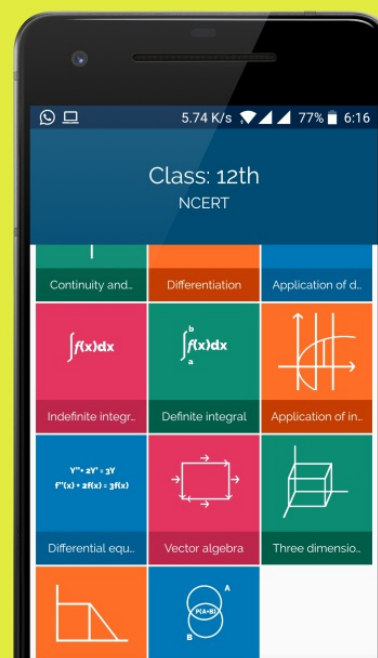| 87	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 10** Find the values of x and y from the following equation: $2[x57y - 3]$ $+ [3 - 412]$ $= [761514]$ ▶ Watch Free Video Solution on Doubtnut
88	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 11** Two farmers Ramkishan and Gurcharan Singh cultivates only three varieties of rice namely Basmati, Permal and Naura. The sale (in Rupees) of these varieties of rice by both the farmers in the month of September and October are given by the following matrices A and B. (i) Find the combined sales in September and October for each farmer in each variety. (ii) Find the decrease in sales from September to October. (iii) if both farmers receive 2% profit on gross sales, compute the profit for each farmer and for each variety sold in October. ▶ Watch Free Video Solution on Doubtnut
89	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 12** Find AB, if $A = [6923]$ and $B = [260798]$. ▶ Watch Free Video Solution on Doubtnut
90	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 13** If $A = [1 - 23425]$ and $B = [242351]$, then find AB, BA. Show that $AB \neq BA$. ▶ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 14 If $A = [100 - 1]$ and $B = [0110]$, then $AB = [01 - 10]$ and $BA = [0 - 110]$.
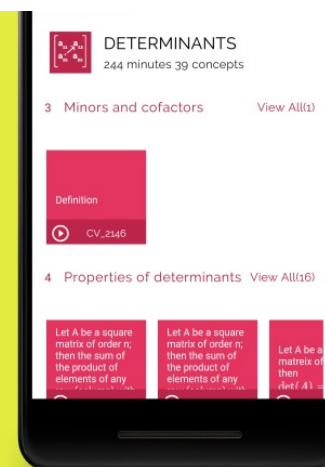
| 91 | Clearly $AB \neq BA$.

|
|---|---|
| 92 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 15**

Find AB, if $A = [0 - 102]$ and $B = [3500]$.

|
| 93 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 16**

If
$A = [11 - 12033$
$- 12]$
, $B = [10 - 1324]$ and
$C = [123 - 420$
$- 21]$
, find A(BC), (AB)C and show that
$(AB)C$
$= A(BC)$
.

|
| 94 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 17**

If
$A = [067 - 6087$
$- 80]$
, $B = [011102120]$, $C = [2 - 23]$ Calculate AC, BC and $(A + B)C$. Also, verify that
$(A + B)C$
$= AC$
$+ BC$

|
| 95 | **NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 18**

If $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$, then show that
$A^3 - 23A - 401$
$= 0$
.

|

96	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 19** In a legislative assembly election, a political group hired a public relations firm to promote its candidate in three ways: telephone, house calls, and letters. The cost per contact (in paise) is given in matrix A as ```""Cos t""p e r""""""con t a c t . Number of contacts of each type made in two cities X and Y is given by matrix B. Find total amount spent by group in two cities X and Y . ▶ Watch Free Video Solution on Doubtnut
97	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 20** If $A = [3\sqrt{3}2420]$ and $B = [2 - 12124]$, verify that (i) $(A')' = A$ (ii) $(A + B)' = A' + B'$ (iii) $(kB)' = kB'$ where k is any constant. ▶ Watch Free Video Solution on Doubtnut
98	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 21** If $A - [-245]$, $B - [13 - 6]$, verify that $(AB)' = B'A'$. ▶ Watch Free Video Solution on Doubtnut
99	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 22** Express the matrix B $$= \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$$ as the sum of a symmetric and a skew symmetric matrix.

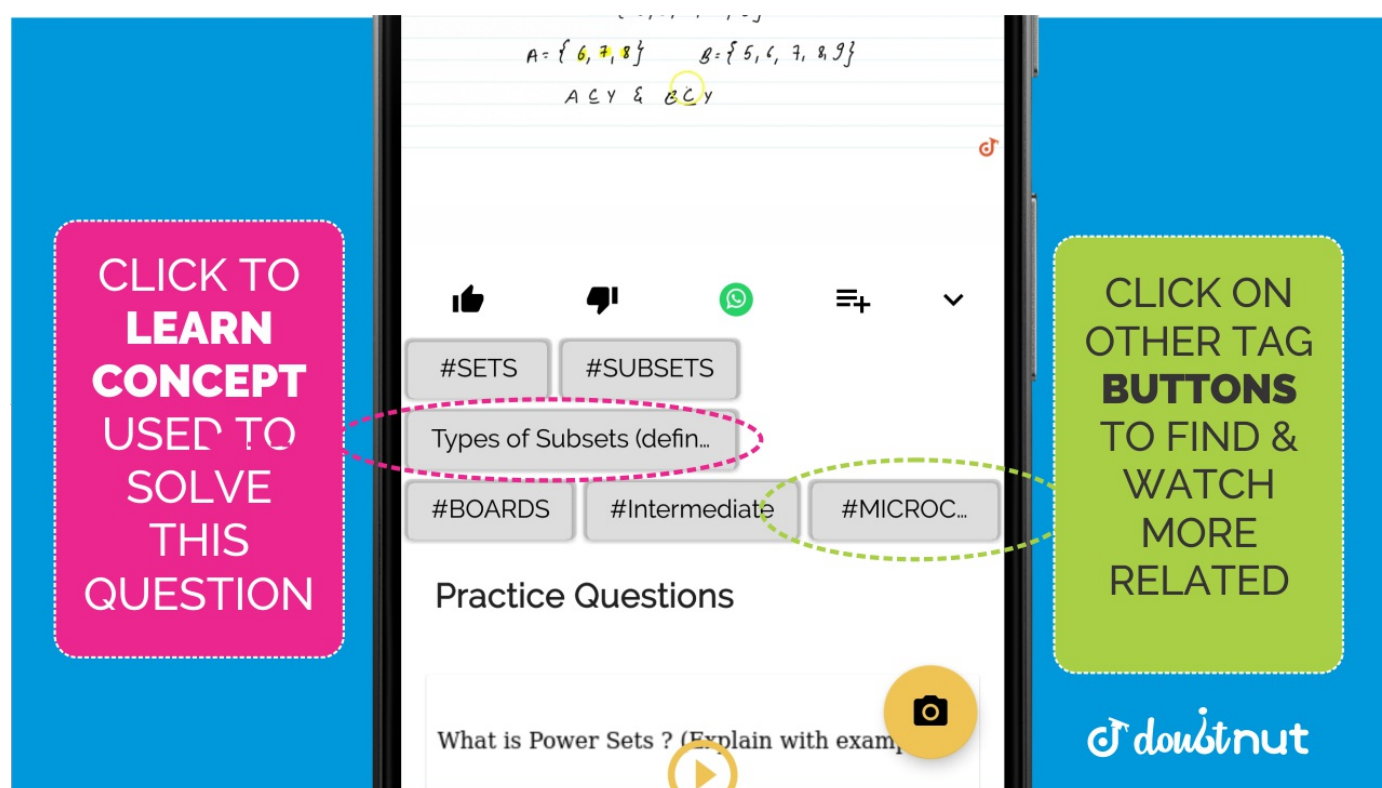|	
100	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 23** By using elementary operations, find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$.
101	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 24** Obtain the inverse of the following matrix using elementary operations $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$.

102	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 25** Find P^{-1} , if it exists, given $P = \begin{bmatrix} 10 & -2 \\ -5 & 1 \end{bmatrix}$.
103	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 26** If $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$, then prove that $A^n = \begin{bmatrix} \cos n\theta & \sin n\theta \\ -\sin n\theta & \cos n\theta \end{bmatrix}, n$ $\in N$.

104	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 27** If A and B are symmetric matrices of the same order, then show that AB is symmetric if and only if A and B commute, that is $AB \quad = \quad BA$. ▶ Watch Free Video Solution on Doubtnut
105	**NCERT - CLASS 12 - CHAPTER 3 MATRICES - SOLVED EXAMPLES - Q 28** Let $A - [2 - 134], B$ $- [5274], C$ $- [2538]$. Find a matrix D such that $CD - AB \quad = \quad 0$ ▶ Watch Free Video Solution on Doubtnut