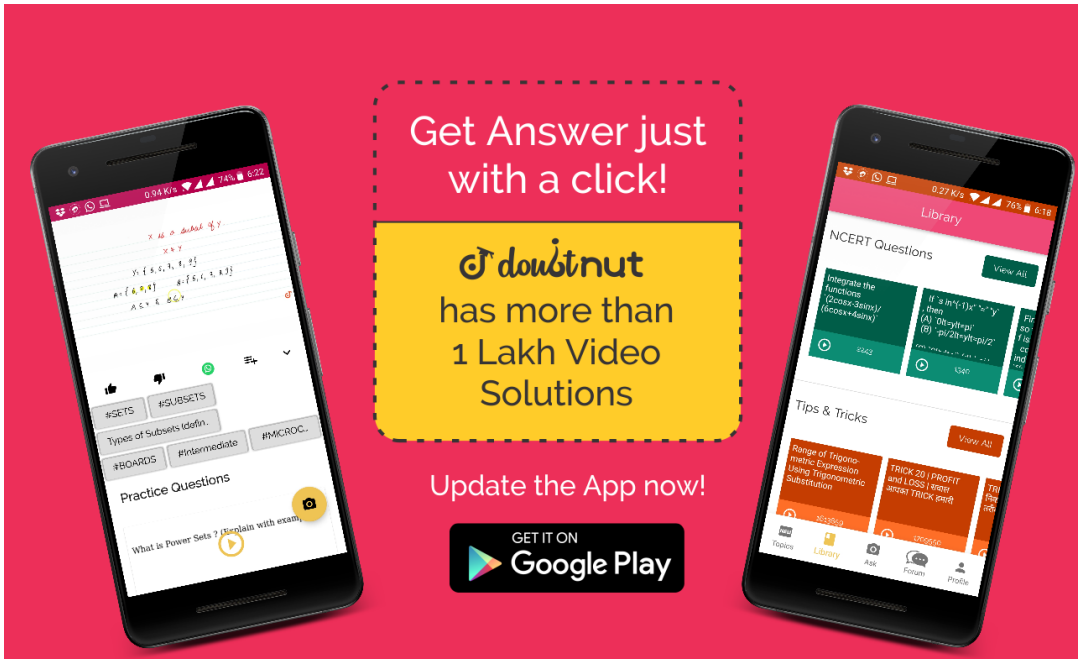
Ques No.	Question
1 - 10495	CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS Using properties of determinants, prove the following $\begin{vmatrix} 3a & -a+b & -a+c \\ a-b & 3b & c-a \\ a-c & b-c & 3c \end{vmatrix} = 3(a+b+c)(ab+bc+ca)$ Click to watch Free Video Solution of this question on Doubtnut
2 - 10519	CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS Using the properties of determinants, prove that following $\begin{vmatrix} a-b & -c^2 & a^2 \\ a^2 & -c & -a^2 \\ b^2 & c^2 & -a-b \end{vmatrix} = (a+b+c)^3$ Click to watch Free Video Solution of this question on Doubtnut
3 - 10538	CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS Using properties of determinants, prove that following $\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$ Click to watch Free Video Solution of this question on Doubtnut



4 - 10582

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following

$$\begin{vmatrix} \alpha & \beta & \gamma \\ \alpha^2 & \beta^2 & \gamma^2 \\ \beta+\gamma & \gamma+\alpha & \alpha+\beta \end{vmatrix} = (\alpha-\beta)(\beta-\gamma)(\gamma-\alpha)(\alpha+\beta+\gamma)$$

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5 - 10586

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Evaluate $\begin{vmatrix} a+ib & c+id \\ -c+id & a-ib \end{vmatrix}$

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6 - 10587

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Find the cofactor of a_{12} in the following $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$

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7 - 10603

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

What positive value of x makes the following pair of determinants equal? $\begin{vmatrix} 2x & 3 \\ 5 & x \end{vmatrix}, \begin{vmatrix} 16 & 3 \\ 5 & 2 \end{vmatrix}$

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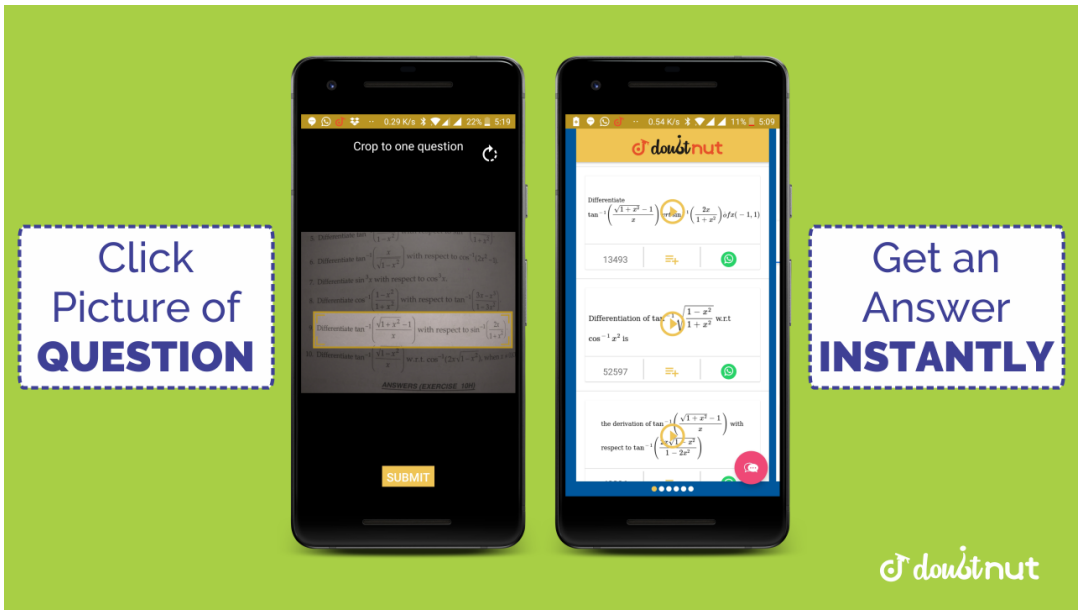

8 - 10642

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} b+c & q+r & y+z \\ c+a & r+p & z+x \\ c+b & p+q & x+y \end{vmatrix} = 2\begin{vmatrix} a & p & x \\ b & q & y \\ c & r & z \end{vmatrix}$$

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9 - 10648

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $\begin{vmatrix} x+1 & x-1 \\ x-3 & x+2 \end{vmatrix} = \begin{vmatrix} 4 & -1 \\ 1 & 3 \end{vmatrix}$, then write the value of x .

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10 - 10664

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If A_{ij} is the cofactor of the element a_{ij} of the determinant

$$\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$$, then write the value of a_{32}. , A_{32}.

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11 - 10695

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

By using properties of determinants, prove the following

$$\begin{vmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{vmatrix} = (5x+4)(4-x)^2$$

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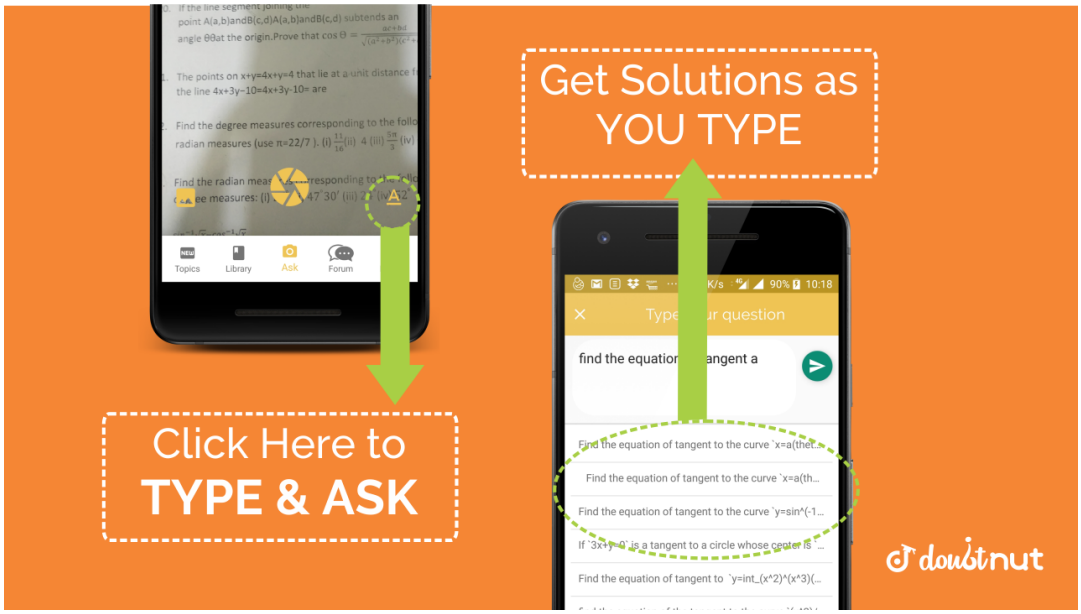

12 - 10709

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Prove the following, using properties of determinants:

$$\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$$

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13 - 10711

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following

$$\begin{vmatrix} a^2 & ab & ac \\ ab & b^2+1 & bc \\ ca & cb & c^2+1 \end{vmatrix} = 1 + a^2 + b^2 + c^2.$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

14 - 10732

Write the value of the following determinant

$$\begin{vmatrix} a-b & b-c & c-a \\ b-c & c-a & a-b \\ c-a & a-b & b-c \end{vmatrix}$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

15 - 10733

Find the value of x, from the following: $\begin{vmatrix} x & 4 \\ 2 & 2x \end{vmatrix} = 0$

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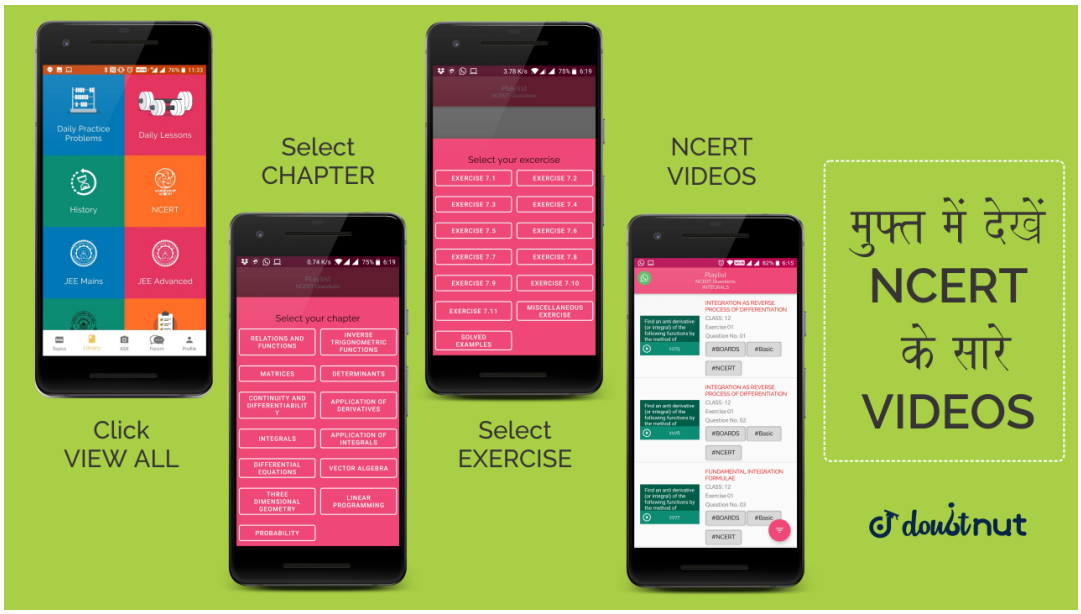

16 - 10742

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, show that

$$\begin{vmatrix} b+a & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$$

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17 - 10767

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

What is the value of the determinant $\begin{vmatrix} 0 & 2 & 0 \\ 2 & 3 & 4 \\ 4 & 5 & 6 \end{vmatrix}$?

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18 - 10778

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following:

$$\begin{vmatrix} x & x^2 & 1+px^3 \\ y & y^2 & 1+py^3 \\ z & z^2 & 1+pz^3 \end{vmatrix} = (1+pxyz)(x-y)(y-z)(z-x)$$

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19 - 10802

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following

$$\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix} = 9y^2(x+y)$$

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20 - 10846

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Write the value of the determinant $\begin{vmatrix} 2 & 3 & 4 \\ 5 & 6 & 8 \\ 6x & 9x & 12x \end{vmatrix}$

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21 - 10857

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $\begin{vmatrix} x & x \\ 1 & x \end{vmatrix} = \begin{vmatrix} 3 & 4 \\ 1 & 2 \end{vmatrix}$, write the positive value of x

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22 - 10863

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

What is the value of the following determinant?

$$\Delta = \begin{vmatrix} 4 & a & b+c \\ 4 & b & c+a \\ 4 & c & a+b \end{vmatrix}$$

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23 - 10868

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $A = \begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix}$, then find the value of k if $|2A| = k|A|$

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24 - 10882

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, solve the following for x:

$$\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$$

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25 - 10894

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following:

$$\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 1+3p+2q \\ 3 & 6+3p & 1+6p+3q \end{vmatrix} = 1$$

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26 - 10916

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3$$

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27 - 10944

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

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 equation: $x - y + 2z = 1; 2y - 3z = 1;$ $3x - 2y + 4z = 2$

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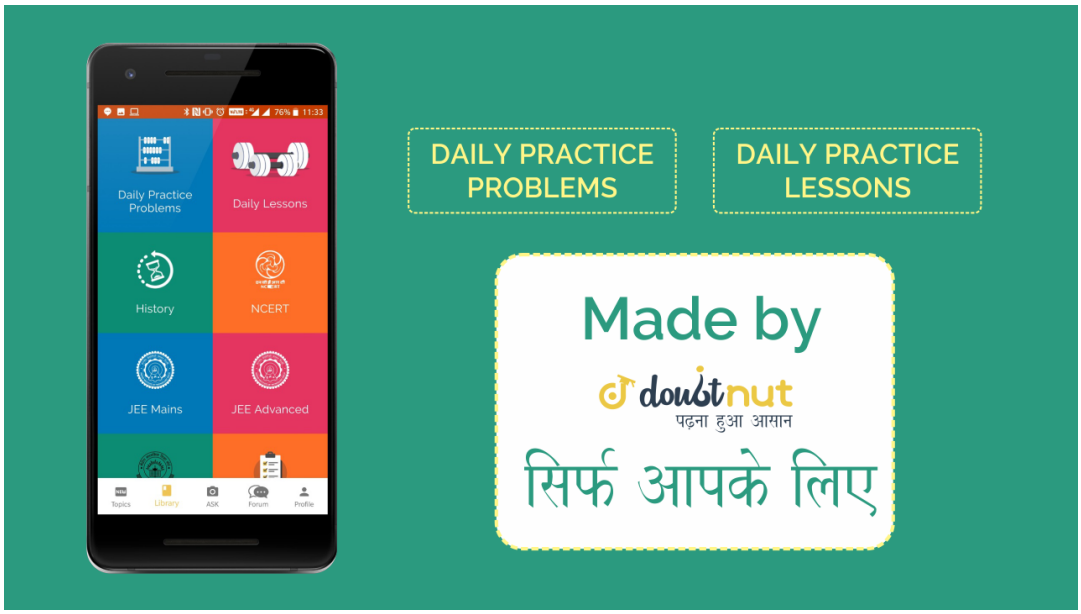

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

28 - 10952

Using properties of determinants, prove that

$$\begin{vmatrix} -a^2 & ab & ac \\ ba & -b^2 & bc \\ ca & cb & -c^2 \end{vmatrix} = 4a^2b^2c^2$$

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29 - 10960

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, show the following:

$$\begin{vmatrix} (b+c)^2 & ab & ca \\ ab & (a+c)^2 & bc \\ ac & bc & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3$$

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30 - 10977

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $A = \begin{vmatrix} 3 & 10 \\ 2 & 7 \end{vmatrix}$, then write A^{-1}

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31 - 11002

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Prove, using properties of determinants:

$$\begin{vmatrix} y+k & y & y \\ y & y+k & y \\ y & y & y+k \end{vmatrix} = k^2(3y+k)$$

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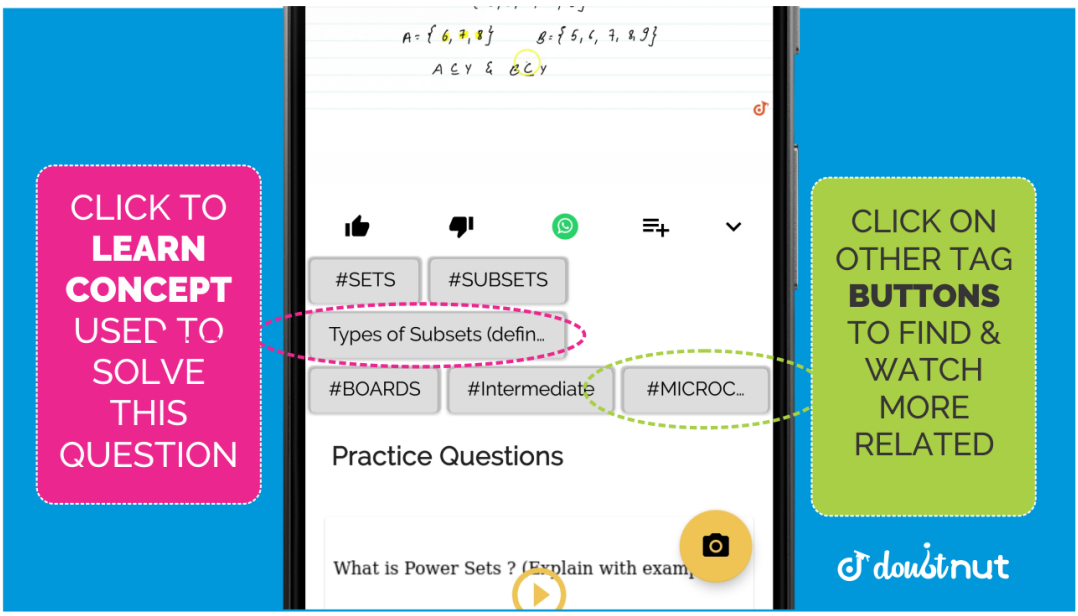

32 - 11009

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Evaluate: $\begin{vmatrix} \cos 15^0, \sin 15^0 \\ \sin 75^0, \cos 75^0 \end{vmatrix}$

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33 - 11017

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following:

$$\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = \left(1 - x^3\right)^2$$

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34 - 11038

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Write the value of the following determinant: $\begin{vmatrix} 102 & 18 & 36 \\ 1 & 3 & 4 \\ 17 & 3 & 6 \end{vmatrix}$

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35 - 13231

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Write the value of $\begin{vmatrix} 2 & 7 & 65 \\ 3 & 8 & 75 \\ 5 & 9 & 86 \end{vmatrix}$

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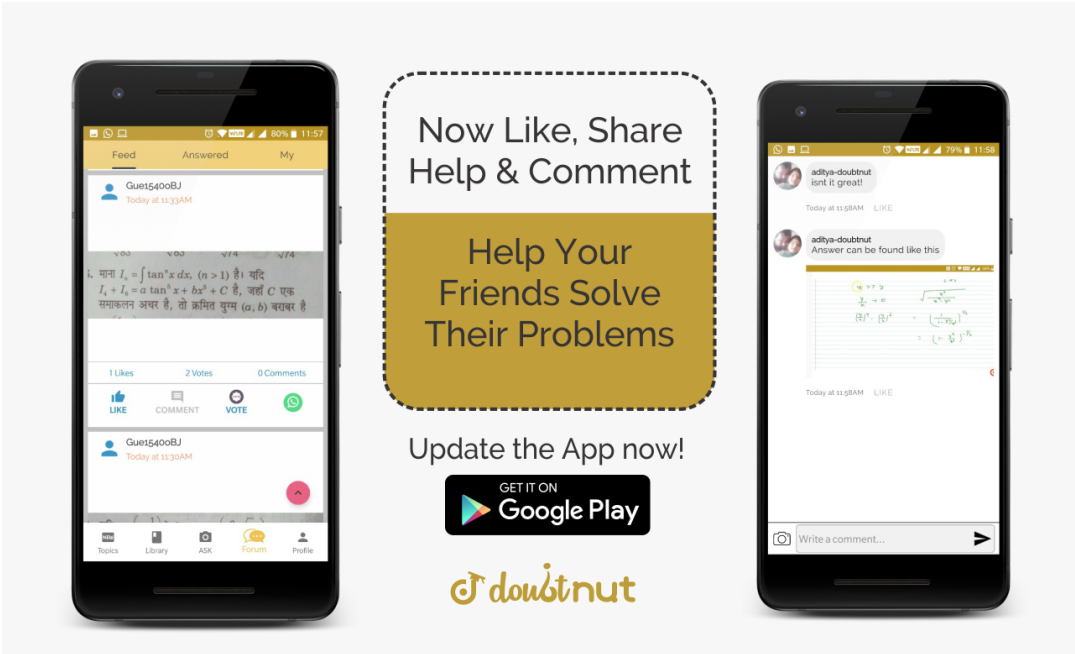

36 - 13240

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following :

$$\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$$

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37 - 13250

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} 2y & y-z-x & 2y \\ 2z & 2z & z-x-y \\ x-y-z & 2x & 2x \end{vmatrix} = (x+y+z)^3$$

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38 - 13266

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$, write the value of x

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39 - 13300

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following :

$$\begin{vmatrix} a & a^2 & bc \\ b & b^2 & ca \\ c & c^2 & ab \end{vmatrix} = (a-b)(b-c)(c-a)(bc+ca+ab)$$

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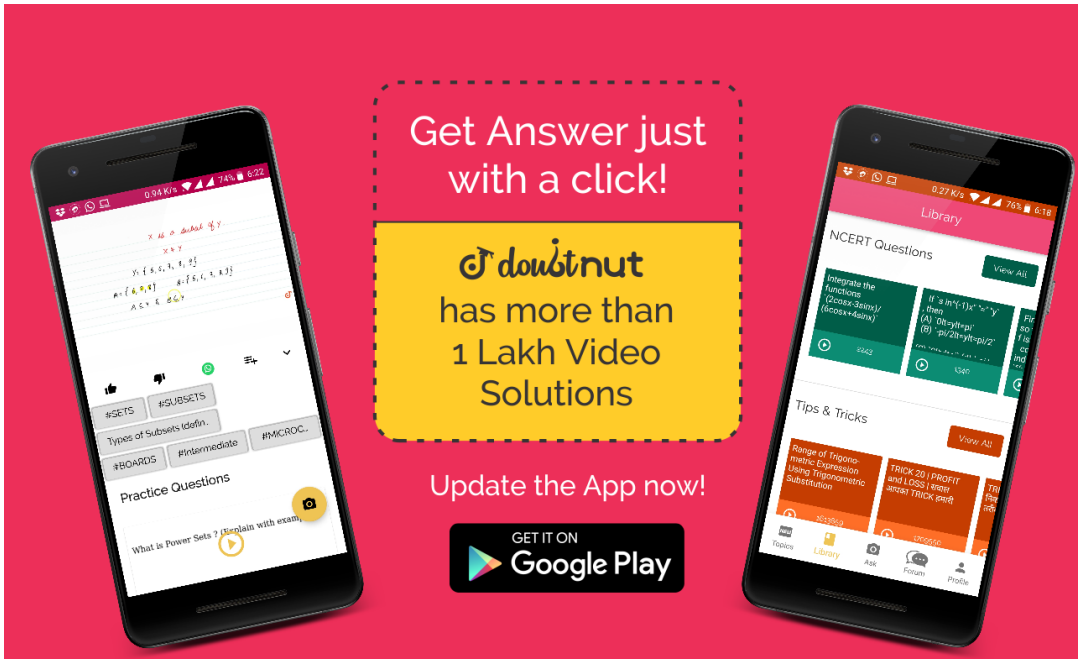

40 - 13301

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Write the value of the determinant $\begin{vmatrix} p & p+1 \\ p-1 & p \end{vmatrix}$.

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41 - 13330

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} a+x & y & z \\ x & a+y & z \\ x & y & a+z \end{vmatrix} = a^2(a+x+y+z)$$

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42 - 13344

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, solve for

$$x: \begin{vmatrix} a+x & a-x & a-x \\ a-x & a+x & a-x \\ a-x & a-x & a+x \end{vmatrix} = 0$$

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43 - 13383

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix} = -2$$

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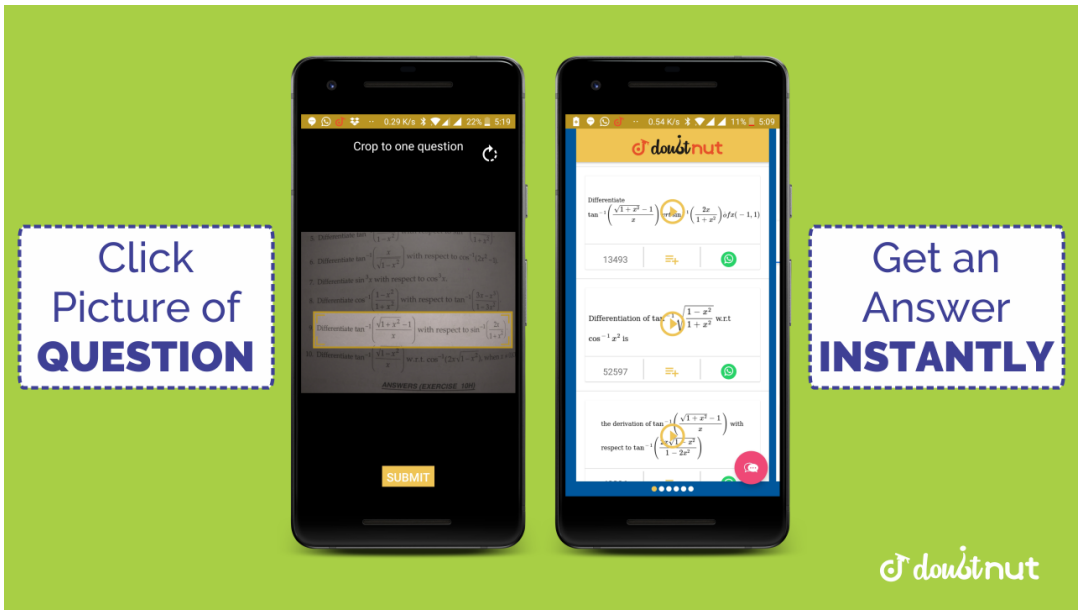

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

44 - 13404

Using properties of determinants, prove the following:

$$\begin{vmatrix} 1 & a & a^2 \\ a^2 & 1 & a \\ a & a^2 & 1 \end{vmatrix} = \left(1-a^3\right)^2$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

45 - 13432

Using properties of determinants, show that ABC is isosceles if

$$\begin{vmatrix} 1 & 1 & 1 \\ 1+\cos A & 1+\cos B & 1+\cos C \\ \cos^2 A+\cos A & \cos^2 B+\cos B & \cos^2 C+\cos C \end{vmatrix} = 0$$

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46 - 13452

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $x \in N$ and $\begin{vmatrix} x+3 & -2 \\ -3x & 2x \end{vmatrix} = 8,$ then find the value of x

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47 - 13470

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Find the maximum value of $\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+\sin\theta & 1 \\ 1 & 1 & 1+\cos\theta \end{vmatrix}$

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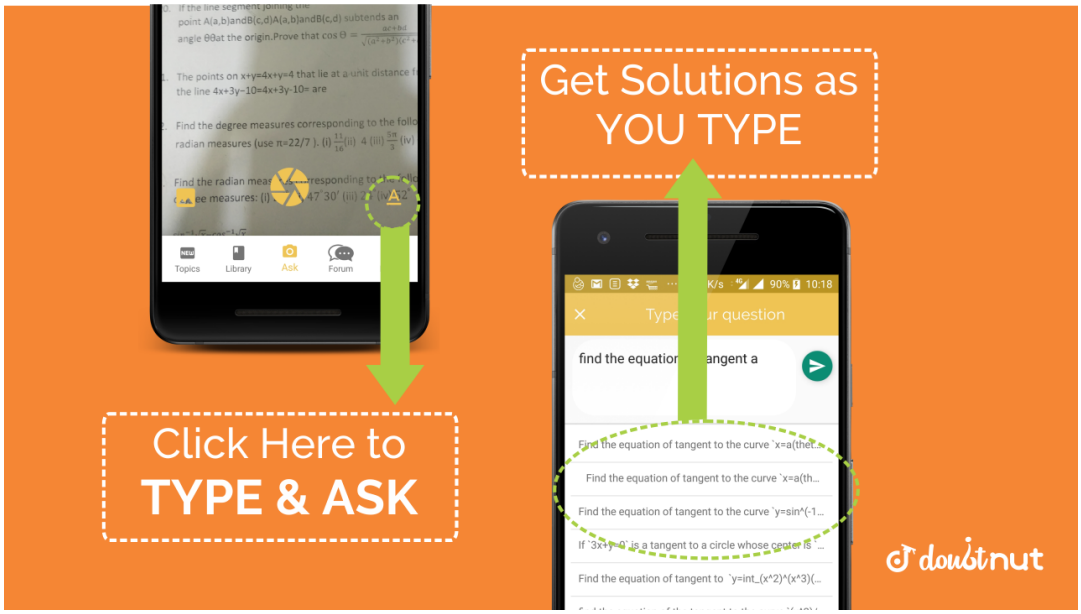

48 - 13476

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Prove that $\begin{vmatrix} yz-x^2 & zx-y^2 & xy-z^2 \\ zx-y^2 & xy-z^2 & yz-x^2 \\ xy-z^2 & yz-x^2 & zx-y^2 \end{vmatrix}$ is divisible by $(x+y+z),$ and hence find the quotient.

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49 - 13495

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If a, b and c are all non-zero and

$\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = 0,$ then prove that

$$\frac{1}{a}+\frac{1}{b}+\frac{1}{c}+1=0$$

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50 - 13500

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

If $\begin{vmatrix} x & sin\theta & \cos\theta \\ -sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{vmatrix} = 8,$ write the value of x

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51 - 228017

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove the following:

$$\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix} = 9y^2(x+y)$$

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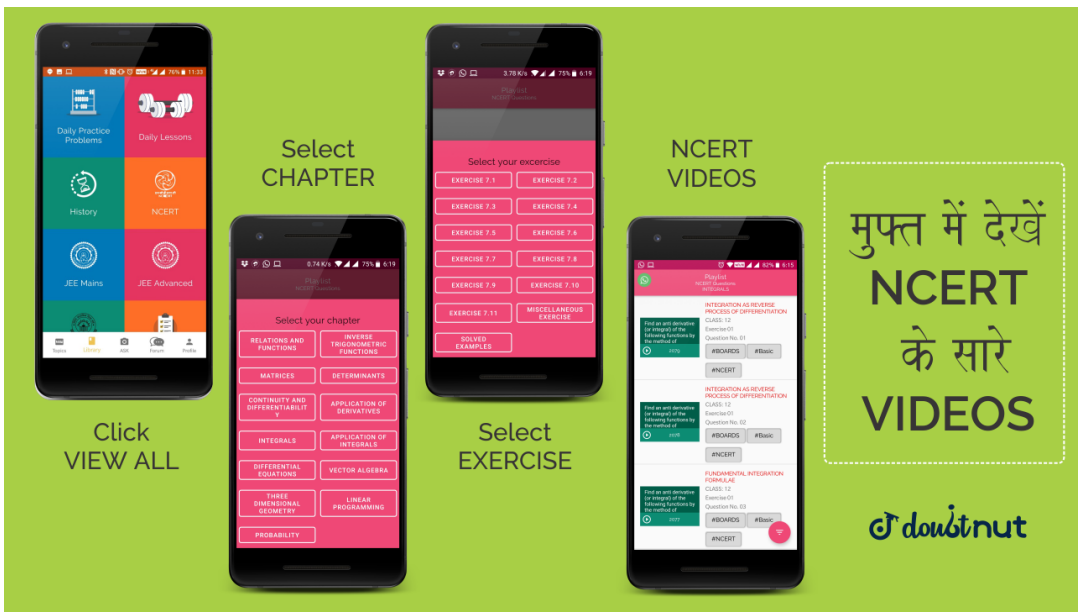

52 - 228155

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

$$\begin{vmatrix} 1+x & 1 & 1 \\ 1 & 1+y & 1 \\ 1 & 1 & 1+z \end{vmatrix} = xy+yz+zx+xyz$$

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53 - 228351

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} a^2+2a & 2a+1 & 1 \\ 2a+1 & a+2 & 1 \\ 3 & 3 & 1 \end{vmatrix} = (a-1)^3$$

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54 - 228353

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants, prove that

$$\begin{vmatrix} a^2+2a & 2a+1 & 1 \\ 2a+1 & a+2 & 1 \\ 3 & 3 & 1 \end{vmatrix} = (a-1)^3$$

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55 - 1166900

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 4. DETERMINANTS

Using properties of determinants prove that

$$\begin{vmatrix} 1 & 1 & 1+3x \\ 1+3y & 1 & 1 \\ 1 & 1+3z & 1 \end{vmatrix} = 9(3xyz+xy+yz+zx)$$

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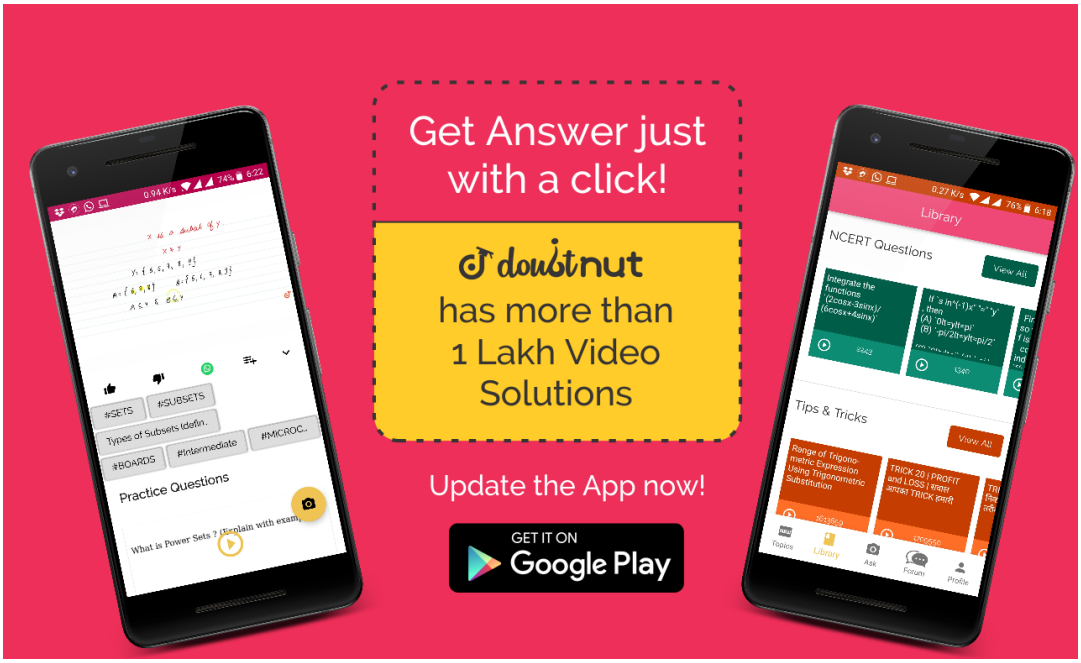
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