EXERCISE 4.1 - Question No. 1

Evaluate the determinants in |24 - 5 - 1|

EXERCISE 4.1 - Question No. 2

Evaluate the determinants in (i) |cosθ - sinθsinθcosθ| (ii)

$$\begin{vmatrix} x^2 - x + 1 & x - 1 \\ x + 1 & 1 \end{vmatrix}$$

EXERCISE 4.1 - Question No. 3

If $A = \begin{bmatrix} 1 & 2 \\ 4 & 2 \end{bmatrix}$, then show that $|2A| = 4|A|$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.1 - Question No. 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 Now

EXERCISE 4.1 - Question No. 5

Evaluate the determinants (i) |3 - 1 - 200 - 13 - 50| (ii) |3 - 4511 - 2231| (iii) |012 - 10 - 3 - 230| (iv) |2 - 1 - 202 - 13 - 50|

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.1 - Question No. 6

If $A = [11 - 221 - 354 - 9]$. Find $|A|$.

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.1 - Question No. 7

Find values of x, if (i) $|2451| - |2x46x|$ (ii) $|2345| - |x32x5|$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.1 - Question No. 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

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 1

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

$|xax + ayby + bzcz + c| = 0$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 2

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

$|a - - - ab - - aa - bc - aa - - c| = 0$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 3

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

$|276538754986| = 0$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 4

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

$|1bca(b + c)1cab(c + a)1abx(a + b)| = 0$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 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 Now

EXERCISE 4.2 - Question No. 6

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

$|0a - b - a0 - cbc0| = 0$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 7

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

$\left| - a^2abacbab^2bacb - c^2 \right| = 4a^2b^2c^2$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 8

By using properties of determinants. Show that: (i)

$$\left|1aa^2 1 \text{ ^ } 21 \text{ ^ } 2\right| = (a - b)(b - c)(c - a) \text{ (ii)}$$

$$\left|111abca^3b^3c^3\right| = (a - b)(b - c)(c - a)(a + b + c)$$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 9

By using properties of determinants. Show that:

$$\left| \times^2 yzyy^2 zxzz^2 xy\right| = (x - y)(y - z)(z - x)(xy + yz + zx)$$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 10

By using properties of determinants. Show that: (i)

$$\begin{vmatrix} x+4 & 2x & 2x \\ 2x & x+4 & 2x \\ 2x & 2x & x+4 \end{vmatrix} = (5x-4)(4-x)^2 \text{ (ii)} \begin{vmatrix} y+k & y & y \\ y & y+k & y \\ y & y & y+k \end{vmatrix} = k^2(3y+k)$$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 11

By using properties of determinants. Show that: (i)

$|a-b-c2a2a2-c-a2b2c2-a-b| = (a+b+c)^3$ (ii)

$|x+y+2zxyzy+z+2xyzxz+x+2y| = 2(x+y+z)^3$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 12

By using properties of determinants. Show that: $\left|1 \times^2 x^2 1 \times x^2 1\right| = \left(1-x^3\right)^2$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 13

By using properties of determinants. Show that:

$$\left|1 + a^2 - b^2 2ab - 2b 2ab 1 - a^2 + b^2 2a 2b - 2a 1 - a^2 - b^2\right| = \left(1 + a^2 + b^2\right)^3$$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 14

By using properties of determinants. Show that:

$$\left|a^2 + 1 ab aca \text{ ^ } 2 + 1 bac bc^2 + 1\right| = \left(1 + a^2 + b^2 + b^2\right)$$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.2 - Question No. 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) $3k|A|$

EXERCISE 4.2 - Question No. 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

EXERCISE 4.3 - Question No. 1

Find area of the triangle with vertices at the point given in each of the following :

(i) (1, 0), (6, 0), (4, 3) (ii) (2, 7), (1, 1), (10, 8) (iii) (- 2, - 3), (3, 2), (- 1, - 8)

EXERCISE 4.3 - Question No. 2

Show that points $A(a, b + c)$, $B(b, c + a)$, $C(c, a + b)$ are collinear.

EXERCISE 4.3 - Question No. 3

Find values of k if area of triangle is 4 sq. units and vertices are (ii)

$(2, 0), (0, 4), (0, k)$

EXERCISE 4.3 - Question No. 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.

EXERCISE 4.3 - Question No. 5

If area of triangle is 35 sq units with vertices (2, - 6), (5, 4)*and*(*k*, 4) . Then k is

(A) 12 (B) - 2 (C) 12, 2 (D) 12, 2

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.4 - Question No. 1

Write Minors and Cofactors of the elements of following determinants: (i)

|2 - 403| (ii) |*acbd*|

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.4 - Question No. 2

Write Minors and Cofactors of the elements of following determinants: (i)

|100010001| (ii) |10435 - 1012|

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.4 - Question No. 3

Using Cofactors of elements of second row, evaluate $\Delta = |538201123|$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.4 - Question No. 4

Using Cofactors of elements of third column, evaluate $\Delta = |1xyz1yzx1zxy|$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.4 - Question No. 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) $a_{11}A_{11} + a_{21}A_{21} + a_{31}A_{31}$

EXERCISE 4.5 - Question No. 1

Find adjoint of the matrice in [1234]

EXERCISE 4.5 - Question No. 2

Find adjoint of the matrice in [1 - 12235 - 201]

EXERCISE 4.5 - Question No. 3

Verify $A(adjA) = (adjA)A = |A|I$ [23 - 4 - 6]

EXERCISE 4.5 - Question No. 4

Verify $A(adjA) = (adjA)A = |A|I$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 5

Find the inverse the matrix (if it exists)given in [2 - 243]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 6

Find the inverse the matrix (if it exists)given in [- 15 - 32]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 7

Find the inverse the matrix (if it exists)given in [123024005]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 8

Find the inverse the matrix (if it exists)given in $\begin{bmatrix} 1 & 0 & 0 \\ 3 & 3 & 0 \\ 5 & 2 & -1 \end{bmatrix}$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 9

Find the inverse the matrix (if it exists) given in [2134 - 10 - 721]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 10

Find the inverse the matrix (if it exists)given in [1 - 1202 - 33 - 24]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 11

Find the inverse the matrix (if it exists)given in [0000cosαsinα0sinα - cosα]

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 12

Let $A = [3725]$ and $B = [6879]$. Verify that $(AB)^{-1} = B^{-1}A^{-1}$.

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 13

If $A = [3112]$, show that $A^2 - 5A + 71 = 0$. Hence find A^{-1} .

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 14

For the matrix A=$\begin{bmatrix} 3 & 2 \\ 1 & 1 \end{bmatrix}$, find the numbers a and b such that $A^2 + aA + bI = O$.

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.5 - Question No. 15

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 Now

EXERCISE 4.5 - Question No. 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 Now

EXERCISE 4.5 - Question No. 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 Now

EXERCISE 4.5 - Question No. 18

If A is an invertible matrix of order 2, then det $\left(A^{-1}\right)$ is equal to (a) det (A) (B) $\frac{1}{\det(A)}$ (C) 1 (D) 0

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 1

Examine the consistency of the system of equations $x + 2y = 2$ $2x + 3y = 3$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 2

Examine the consistency of the system of equations $2x - y = 5\ x + y = 4$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 3

Examine the consistency of the system of equations $x + 3y = 5\ 2x + 6y = 8$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 4

Examine the consistency of the system of equations $x + y + z = 1,$

$2x + 3y + 2z = 2,\ ax + ay + 2az = 4$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 5

Examine the consistency of the system of equations $3xy2z = 2\ 2yz = 1\ 3x5y = 3$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 6

Examine the consistency of the system of equations $5xy + 4z = 5$

$2x + 3y + 5z = 2\ 5x2y + 6z = 1$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 7

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

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 8

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

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 9

Solve system of linear equations, using matrix method, $4x3y = 3$ $3x5y = 7$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 10

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

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 11

Solve system of linear equations, using matrix method, $2x + y + z = 1$

$x - 2y - z = \frac{3}{2}\ 3y - 5z = 9$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 12

Solve system of linear equations, using matrix method, $x - y + z = 4\ 2x + y3z = 0$

$x + y + z = 2$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 13

Solve system of linear equations, using matrix method, $2x + 3y + 3z = 5$

$x - 2y + z = -4\ 3x - y2z = 3$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 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 $x + y - 2z = -3$

Watch Free Video Solution on Doubtnut Now

EXERCISE 4.6 - Question No. 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.

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 1

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

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 2

Without expanding the determinant, prove that $\begin{vmatrix} a & a^2 & bc \\ b & b^2 & ca \\ c & c^2 & ab \end{vmatrix} = \begin{vmatrix} 1 & a^2 & a^3 \\ 1 & b^2 & b^3 \\ 1 & c^2 & c^3 \end{vmatrix}$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 3

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

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 4

If a, b and c are real numbers, and $\Delta = \begin{vmatrix} b+c & c+a & a+b \\ c+a & a+b & b+c \\ a+b & b+c & c+a \end{vmatrix} = 0$. Show that

either $a+b+c=0$ or $a=b=c$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 5

Solve the equation $|x+a \times \times +a \times \times +a| = 0$, $a \neq 0$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 6

Prove that $\begin{vmatrix} a^2 & bc & ac+c^2 \\ a^2+ab & b^2 & ac \\ ab & b^2+bc & c^2 \end{vmatrix} = 4a^2b^2c^2$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 7

If $A^{-1} = [3 \; -11 \; -156 \; -55 \; -22]$ and $B = [12 \; -2 \; -1300 \; -21]$, find $(AB)^{-1}$.

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 8

Let $A = [1 \; -21 \; -231115]$ verify that (i) $[adjA]^{-1} = adj\left(A^{-1}\right)$ (ii) $\left(A^{-1}\right)^{-1} = A$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 9

Evaluate $|xyx + yyx + yxx + yxy|$.

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 10

Evaluate $\begin{vmatrix} 1 & x & y \\ 1 & x+y & y \\ 1 & x & x+y \end{vmatrix}$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 11

Using properties of determinants. Prove that

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

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 12

Using properties of determinants. Prove that

$\left|xx^2 1 + px^3 yy^2 1 + py^3 zz^2 1 + pz^3\right| = (1 + pxyz)(x - y)(y - z)(z - x)$, where p is any scalar.

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 13

Using properties of determinants. Prove that

$$|3a - a + b - a + c - b + a3b - b + c - c + a - c + b3c| = 3(a + b + c)(ab + bc + ca)$$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 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 Now

MISCELLANEOUS EXERCISE - Question No. 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 Now

MISCELLANEOUS EXERCISE - Question No. 16

Solve the system of equations $\frac{2}{x}+\frac{3}{y}+\frac{10}{z}=4\ \frac{4}{x}-\frac{6}{y}+\frac{5}{z}=1\ \frac{6}{x}+\frac{9}{y}-\frac{20}{z}=2$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 17

If a, b, c, are in A.P, then the determinant

$|x+2x+3x+2ax+3x+4x+2bx+4x+5x+2c|$ is (A) 0 (B) 1 (C) x (D) 2x

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 18

If x, y, z are nonzero real numbers, then the inverse of matrix $A=[x000y000z]$ is

(A) $\left[x^{-1}000y^{-1}000z^{-1}\right]$ (B) $xyz\left[x^{-1}000y^{-1}000z^{-1}\right]$ (C) $\frac{1}{xyz}[x000y000z]$ (D) $\frac{1}{xyz}[100010001]$

Watch Free Video Solution on Doubtnut Now

MISCELLANEOUS EXERCISE - Question No. 19

Let $A = [1\sin\theta 1 \text{ - } \sin\theta 1 \sin\theta \text{ - } 1 \text{ - } \sin\theta 1]$, where $0 \leq \theta \leq 2\pi$. Then (A)

$Det(A) = 0$ (B) $Det(A) \in (2, \infty)$ (C) $Det(A) \in (2, 4)$ (D) $Det(A) \in [2, 4]$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 1

Evaluate $|24 \text{ - } 12|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 2

Evaluate $| \times \ + 1x \text{ - } 1x|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 3

Evaluate the determinant $\Delta = |124 - 130410|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 4

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 5

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 6

Verify Property 1 for $\Delta = |2 - 3560415 - 7|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 7

Verify Property 2 for $\Delta = |2 - 3560415 - 7|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 8

Evaluate $\Delta = |323223323|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 9

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 10

Show that $|abca + 2xb + 2yc + 2zxyz| = 0$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 11

Prove that $|aa + ba + b + c2a3a + 2B4a + 3b + 2c3a6a + 3b10a + 6b + 3c| = a^3$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 12

Without expanding, prove that $\Delta = \begin{vmatrix} x+y & y+z & z+x \\ z & x & y \\ 1 & 1 & 1 \end{vmatrix} = 0$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 13

Evaluate $\Delta = |1abc1bca1cab|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 14

Prove that $|b + caabc + aba + b| = 4abc$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 15

If x, y, z are different and $\Delta = \left| \times^2 1 + x^3 yy^2 1 + y^3 zz^2 1 + z^3 \right| = 0$, then

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 16

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 17

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 18

Find the equation of the line joining A(1,3) and B (0,0) using determinants and find k if D(k, 0) is a point such that area of triangle ABD is 3sq units.

Watch Free Video Solution on Doubtnut Now 

SOLVED EXAMPLES - Question No. 19

Find the minor of element 6 in the determinant $\Delta = |123456789|$

Watch Free Video Solution on Doubtnut Now 

SOLVED EXAMPLES - Question No. 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 Now 

SOLVED EXAMPLES - Question No. 21

Find minors and cofactors of the elements a_{11}, a_{21} in the determinant

$\Delta = \left|a_{11}a_{12}a_{13}a_{21}a_{22}a_{23}a_{31}a_{32}a_{23}\right|$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 22

Find minors and cofactors of the elements of the determinant |2 - 3560415 - 7|

and verify that $a_{11}A_{31} + a_{12}A_{32} + a_{13}A_{33} = 0$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 23

Find adj for $A = [2314]$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 24

If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$,then verify that $AadjA = |A|I$. Also find A^{-1} .

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 25

If $A = [231 - 4]$ and $B = [1 - 2 - 13]$, then verify that $(AB)^{-1} = B^{-1}A^{-1}$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 26

Show that the matrix $A = [2312]$ satisfies the equation $A^2 - 4A + I = 0$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 27

Solve the system of equations $2x + 5y = 1$ and $3x + 2y = 7$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 28

Solve the following system of equations by matrix method. $3x2y + 3z = 8$

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

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 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.

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 30

If a, b, c are positive and unequal, show that value of the determinant

$\Delta = |abcbcacab|$ is negative.

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 31

If a, b, c are in A.P, find value of $\begin{vmatrix} 2y+4 & 5y+7 & 8y+a \\ 3y+5 & 6y+8 & 9y+b \\ 4y+6 & 7y+9 & 10y+c \end{vmatrix}$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 32

Show that $\Delta = \left|(y+z)^2 xyz \times y(x+z)^2 yzxzyz(x+y)^2\right| = 2xyz(x+y+z)^3$.

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 33

Use product [1 - 1202 - 33 - 24][- 20192 - 361 - 2] to solve the system of equations $x - y + 2z = 1\ 2y - 3z = 1\ 3x - 2y + 4z = 2$

Watch Free Video Solution on Doubtnut Now

SOLVED EXAMPLES - Question No. 34

Prove that

$\Delta = [a + bxc + dxp + qxax + bcx + dpx + quvw] = \left(1 - x^2\right)|acpbdqucw|$

Watch Free Video Solution on Doubtnut Now