

Important Question's

Check Important Question with Answer Video On [YOUTUBE]



(Click here)



Topic - Determinants

- Determinants of order

$$\begin{vmatrix} b+c & b+c & b+c \\ c+a & c+a & c+a \\ a+b & a+b & a+b \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$$

- Evaluate the determinant

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} \quad \text{where } \omega \text{ is a cube root of unity}$$

- find the area of the triangle whose vertices are :

$$(-3, 5), (3, -6), (7, 2)$$

$$A(1, 3), B(2, 2), (0, 1)$$

- Cramer Rule

$$x + 2y - z = 1, 3x + 8y + 2z = 28, 4x + 9y + z = 14$$

$$x + y + z = 5, y + z = 2, x + z = 3$$

Important Question's

Check Important Question with Answer Video On [YOUTUBE]



(Click here)



Topic - Matrix

- The exponent of a square matrix :

Let $A = \begin{vmatrix} 2 & 3 \\ -1 & 2 \end{vmatrix}$ and $f(x) = x^2 - 4x + 7$. Show that $f(a) = 0$ upon 2×2 . Hence find A^{50}

- Inverse Matrixs :

$$3x + 4y + 7z = 14, 2x - y + 3z = 4, x + 2y - 3z = 0$$

$$3x + 4y + 7z = -2, 2x - y + 3z = 6, 2x + 2y - 3z = 0$$

- If $a = \begin{vmatrix} \frac{1}{2} & \sqrt{-3/2} \\ \sqrt{-3/2} & \frac{1}{2} \end{vmatrix}$, find A^3

If $A = \begin{vmatrix} 1 & -1 & 2 \\ 0 & 4 & 7 \\ 3 & 2 & 1 \end{vmatrix}$ show that A is a row equivalent to I upon 3

Important Question's

[Check Important Question with Answer Video On \[YOUTUBE\]](#)



[\(Click here\)](#)



Topic - Matrix

- Determine the rank of matrix

$$A = \begin{vmatrix} 0 & 1 & 2 & 1 \\ 5 & 3 & 14 & 4 \\ 1 & -1 & 2 & 0 \end{vmatrix}$$

- Show that 8 divides $3^{2n} - 1 \forall \epsilon \mathbb{N}$ (for all, epsilon.)
- Use the principle to show that number for every natural number n

$$2 + 2^2 + \dots + 2^n = 2^{n+1} - 2$$

$$1^3 + 2^3 + \dots + n^3 = \frac{1}{4}n^2(n+1)^2$$
- Find the sum of all integers between 100 and 1000 which are divisible by 9
- Find the sum of first all integer between 100 and 1000 which are divisible by 7

Important Question's

[Check Important Question with Answer Video On \[YOUTUBE\]](#)



[\(Click here\)](#)



Topic - Arithmetic Progression (A.P.)

- $0.4 + 0.44 + 0.444 + \dots$ Find the n terms.
- If the 7th term of an AP is equal to 11th times the 11th term of the A.P., find the 18th term.
- $32x^3 - 48x^2 + 22x - 3 = 0$, give the roots are in A.P.

Topic - Geometric Progression (G.P.)

- The common ratio of a G.P. is $-4/5$ and the sum of infinity is $80/9$. Find the term of the G.P.
- How many terms of the GP under root 3, $3, 3$ under root 3, \dots Add upto $39 + 13$ under root 3.
- Solve the equation $8^x - 14 + 7x - 1 = 0$, the roots being in G.P.

Topic - DeMoivre's theorem

- $i + \sqrt[3]{3}$
- $1 + i^{1/8}$

Topic - Cube Roots of Unity

- If $1, \omega, \omega^2$ are cube roots of units, show that :

$$(1 + \omega)(1 + \omega^2)(1 + \omega^3)(1 + \omega^4)(1 + \omega^6)(1 + \omega^8) = 4.$$

Topic - Quadratic Equations

- $m - n / m + n, m + n / m - n$.
- $2 - \sqrt{3}, 2 + \sqrt{3}$.

Important Question's

Check Important Question with Answer Video On [YOUTUBE]



(Click here)



Topic - Alpha and beta

- If β and α are roots of $x^2 - 2kx + k^2 - 1 = 0$, β and $\alpha = 10$, find k .
- If β and α are roots of $x^2 - 4ax + 4^2 - 9 = 0$, β^2 and $\alpha^2 = 26$, find a .
- Find the two numbers whose sum is 54 and the product is 629.

Topic - Inequality

- $15x^2 + 4x - 4 \geq 0$.
- $x - \frac{4}{2} \leq \frac{5}{12}$.

Topic - Differentiate of parametric forms

- If $y = \ln x / x$, show that $d^2y / dx^2 = 2 \ln x - 3/x^3$. Dec 16, 17
- $y = ae^{mx} = be^{mx} + 4x$, show that $d^2y / dx^2 = m^2 (y - 4)$

Topic - Rate of Change of Quantities

- A spherical balloon is being inflated at the rate of 900 cubic centimeters per second. How fast is the radius of the balloon increasing when the radius is 15cm?

Topic - Increasing And Decreasing functions

- $f(x) = 16x^2 + 3x + 2$.
- $f(x) = 1 + x = x^2 / 1 - x + x^2$, $x \in R$.

Important Question's

[Check Important Question with Answer Video On \[YOUTUBE\]](#)



[\(Click here\)](#)

**Topic - Local maxima and local minima**

- $f(x) = x^3 - 6x^2 + 9x + 100$.

Topic - Integral

- $\int dx / (1 + 3e + 2e^{2x})$.
- $\int \sqrt{3-2x} \, dx$.
- $\int dx / (e^3 + 1)$.

Topic - Length of Curves

- Find the length of $y = 3 + x$ from $(1, 4)$ to $(3, 6)$.

Topic - Vector and Coplanar

- $a = 2i - 4j + 3k$, $b = \lambda i - 2j + k$, $c = 2i + 3j + 3k$.

Topic - Component of a vector

- Prove that the three medians of a triangle meet a point called the centroid of the triangle which divides each of the medians in the ratio of 2:1.
- If the mid-points of the consecutive sides of a quadrilateral are joined, they show by using vectors that they form a parallelogram.

Important Question's

[Check Important Question with Answer Video On \[YOUTUBE\]](#)



[\(Click here\)](#)



Topic - Area of the parallelogram

- Find the area of the triangle with vertices are :

$$A(1, 3), B(2, 2), C(0, 1)$$

Topic - Straight Line passing direction

- $(1, 2, 3)$ and $(-1, 1, 0)$
- Determine the value of x for which $f(x) = 5x^{3/2}, x > 0$.

Topic - Vector and Cartesian

- $(1, -1, -2)$ and $3i - 2j + 5k$.

Topic - Shortest distance

$$\vec{r} = (3\hat{i} + 4\hat{j} - 2\hat{k}) + t(-\hat{i} + 2\hat{j} + \hat{k}) \text{ and}$$

$$r = (i - 7j - 2k) + t(i + 3j + 2k).$$

Topic - Cost Minimisation

A diet for a sick person must contain at least 1400 units of vitamins, 50 units of minerals, and 1400 calories. Two foods A and B are available for Rs 4 and Rs 3 per unit, respectively. If one unit A contains 200 units of vitamins, one unit of mineral and 40 calories, and one unit of food B contains 100 units of vitamins, two units of minerals, and 40 calories. Find what combination of food is used least cost ?



IGNOU ADVISOR Study materials, Latest information

