RAVI MATHS TUITION CENTER, CHENNAI-82. WHATSAPP - 8056206308

Matrices

12th Standard

Maths

66 x 1 = 66

1) If a matrix A is both symmetric and skew symmetric then matrix A is

(a) a scalar matrix (b) a diagonal matrix (c) a zero matrix of order n × n (d) a rectangular matrix.

2) $A = [a_{ij}]_{m \times n}$ is a square matrix, if

(a) m < n (b) m > n (c) m = n (d) None of these

3) The number of all possible matrices of order 3 × 3 with each entry

(a) 27 (b) 18 (c) 81 (d) 512

4) Assume X, Y, Z, W and P are matrices of order 2 × n, 3 × k, 2 × p, n × 3 and p × k, respectively.
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 arbitrary, k = 3 (d) k = 2, p = 3

5) Assume X, Y, Z, W and P are matrices of order 2 × n, 3 × k, 2 × p, n × 3 and p × k, respectively.
If n = p, then the order of the matrix 7X – 5Z is:

(a) p × 2 (b) 2 × n (c) n × 3 (d) p × n

6) 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

7) If $A = \begin{bmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{bmatrix}$, and A + A' = I, then the value of a is

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{6}$ (c) π (d) $\frac{3\pi}{2}$

8) 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

9) If $A = \begin{bmatrix} \alpha & \beta \\ \gamma & -\alpha \end{bmatrix}$ 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) $1 + \alpha^2 - \beta\gamma = 0$

10) 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

11) 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

12) 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) $x = \frac{-1}{3}, y = 7$ (b) not possible to find (c) $y = 7, x = \frac{-2}{3}$ (d) $x = \frac{-1}{3}, y = \frac{-2}{3}$

13) If a matrix has 6 elements, then number of possible orders of the matrix can be

(a) 2 (b) 4 (c) 3 (d) 6

14) If $A = [a_{ij}]$ is a 2 × 3 matrix, such that $a_{ij} = \frac{(-i+2j)^2}{5}$. Then a_{23} is _____

(a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{9}{5}$ (d) $\frac{16}{5}$

15) If A = diag(3, -1), then matrix A is

(a) $\begin{bmatrix} 0 & 3 \\ 0 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} -1 & 0 \\ 3 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} 3 & 0 \\ 0 & -1 \end{bmatrix}$ (d) $\begin{bmatrix} 3 & -1 \\ 0 & 0 \end{bmatrix}$

16) Total number of possible matrices of order 2 × 3 with each entry 1 or 0 is

(a) 6 (b) 36 (c) 32 (d) 64

17) If A is a square matrix such that $A^2=A$, then $(I + A)^2 - 3A$ is

(a) I (b) 2A (c) 3I (d) A

18) If matrices A and B are inverse of each other then

(a) AB = BA (b) AB = BA = I (c) AB = BA = 0 (d) AB = 0, BA = I

19) If A = $\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$

(a) $\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} 4 & 0 \\ 4 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$

20) The diagonal elements of a skew symmetric matrix are

(a) all zeroes (b) are all equal to some scalar k(≠ 0) (c) can be any number (d) none of these

21) If A = $\begin{bmatrix} 5 & x \\ y & 0 \end{bmatrix}$ and A = A' then

(a) x = 0, y = 5 (b) x = y (c) x + y = 5 (d) x − y = 5

22) $\begin{bmatrix} x+10 & y^2+2y \\ 0 & -4 \end{bmatrix} = \begin{bmatrix} 3x+4 & 3 \\ 0 & y^2-5y \end{bmatrix}$ Then the value of x is _____

(a) 6 (b) 3 (c) 2 (d) 0

23) $\begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$ is a matrix of order

(a) 1 (b) 4 (c) 2 (d) 3

24) For what real value of y will matrix A be equal to matrix B, where
$A = \begin{bmatrix} 3x-4 & 5y \\ 8 & y^2-4y \end{bmatrix}; B = \begin{bmatrix} x+1 & 6y^2+1 \\ 8 & -3 \end{bmatrix}$

(a) 1, 3 (b) No real value (c) 1/3, 1/2 (d) 2 and 3

25) [5] is a scalar matrix of order

(a) 2 (b) 5 (c) 0 (d) 1

26) $\begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$ is example of

(a) an identity matrix (b) a zero matrix. (c) a Scalar m (d) diagonal matrix.

27) $\begin{bmatrix} 2 & 3 & 1\,5 & 1 \\ 1 & 2 & 4\,2 & 2 \end{bmatrix}$ is a matrix of order

(a) 2 x 5 (b) 2 x 2 (c) 5 x 2 (d) 5 x 5

28) What is the element in the 2nd row and 1st column of a 2 x 2 Matrix A= [a_{ij}], such that a = (i + 3) (j − 1)

(a) 0 (b) 4 (c) -5 (d) 5

29) If, $a_{ij} = \frac{1}{2}|i - 3j|$ the value of a_{22} is

(a) 0 (b) -2 (c) 2 (d) 3

30) To construct a 2 x 3 matrix [a_{ij}], such that aij = $-\frac{i-3j}{4}$ The values that i and j can take are .....

(a) i = 1, 2, 3 ; j = 1, 2, 3 (b) i = 1, 2 ; j = 1, 2, 3 (c) i = 1, 2 ; j = 1, 2 (d) i = 1, 2, 3 ; j = 1, 2

31) If A is a 3 x 2 matrix, B is a 3 x 3 matrix and Cis a 2 x 3 matrix, then the elements in A, Band C are respectively

(a) 6,9,8 (b) 6,9,6 (c) 9,6,6 (d) 6,6,9

32) If a matrix has 8 elements, then which of the following will not be a possible order of the matrix?

(a) 1x 8 (b) 2 x 4 (c) 4x2 (d) 4 x 4

33) Total number of possible matrices of order 3 x 3 with each entry 2 or 0 is

(a) 9 (b) 27 (c) 81 (d) 512

34) The matrix $P = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{bmatrix}$ is not A.

(a) square matrix (b) diagonal matrix (c) unit matrix (d) None of these

35) 1f If $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 & 2 \\ 4 & 3 & 1 \end{bmatrix}, C = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ and $D = \begin{bmatrix} 4 & 6 & 8 \\ 5 & 7 & 9 \end{bmatrix}$, then which of the following is defined?

(a) A + B (b) B + C (c) C + D (d) B + D

36) If $\begin{bmatrix} 1 & 2 \\ -2 & -b \end{bmatrix} + \begin{bmatrix} a & 4 \\ 3 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 0 \end{bmatrix}$, then $a^2 + b^2$ is equal to

(a) 20 (b) 22 (c) 12 (d) 10

37) If $A = \begin{bmatrix} 0 & 2 \\ 3 & -4 \end{bmatrix}$ and $kA = \begin{bmatrix} 0 & 3a \\ 2b & 24 \end{bmatrix}$, then the values of k, a, b are respectively

(a) 6,-12,-18 (b) -6,4,9 (c) -6,-4,-9 (d) -6,12,18

38) If A and B are two matrices of the order $3 \times m$ and $3 \times n$ respectively and m=n, then the order of the matrix $(5A - 2B)$ is

(a) m x 3 (b) 3 x 3 (c) m x n (d) 3 x n

39) The product $\begin{bmatrix} a & b \\ -b & a \end{bmatrix} \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$ is equal toi s equal to

(a) $\begin{bmatrix} a^2 + b^2 & 0 \\ 0 & a^2 + b^2 \end{bmatrix}$ (b) $\begin{bmatrix} (a+b)^2 & 0 \\ (a+b)^2 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} a^2 + b^2 & 0 \\ a^2 + b^2 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} a & 0 \\ 0 & b \end{bmatrix}$

40) If the product of two matrices is a zero matrix, then

(a) atleast one of the matrix is a zero matrix (b) both the matrices are zero matrices

(c) it is not necessary that one of the matrices is a zero matrix (d) None of the above

41) If $A = \begin{bmatrix} 2 & -1 & 3 \\ -4 & 5 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 4 & -2 \\ 1 & 5 \end{bmatrix}$, then

(a) only AB is defined (b) only BA is defined (c) AB and BA both are defined (d) AB and BA both are not defined

42) If A and B are square matrices of the sameorder, then (A + B) (A - B) is equal to

(a) A^2-B^2 (b) A^2 - BA - AB - B^2 (c) A^2 - B^2 + BA - AB (d) A^2 - BA + B^2 + AB

43) The set of all 2x 2 matrices which is commutative with the matrix. $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$ with respect to matrix multiplication is

(a) $\begin{bmatrix} p & q \\ r & r \end{bmatrix}$ (b) $\begin{bmatrix} p & q \\ q & r \end{bmatrix}$ (c) $\begin{bmatrix} p-q & p \\ q & r \end{bmatrix}$ (d) $\begin{bmatrix} p & q \\ q & p-q \end{bmatrix}$

44) $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$, then if the value of α is

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $\frac{3\pi}{2}$ (d) π

45) If A is matrix of order m x nand B is a matrix such that AB' and B' A are both defined, then order of matrix B is

(a) m x m (b) nxn (c) nxm (d) mxn

46) The matrix $\begin{bmatrix} 0 & -5 & 8 \\ 5 & 0 & 12 \\ -8 & -12 & 0 \end{bmatrix}$ is a

(a) diagonal matrix (b) symmetric matrix (c) skew-symmetric matrix (d) scalar matrix

47) 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

48) On usiig elementary column operations $C_2 \rightarrow C_2 - 2C_1$ in the following matrix equation $\begin{bmatrix} 1 & -3 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$,we have

(a) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -2 & 2 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ -0 & 2 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -3 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$

49) On using elementary column operations $C_2 \rightarrow C_2 - 2C_1$ in the following matrix equation $\begin{bmatrix} 1 & -3 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$, we have

(a) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -2 & 2 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ -0 & 2 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -3 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$

50) On using elementary row operation $R_1 \rightarrow R_1 - 3R_2$ in the following matrix equation $\begin{bmatrix} 4 & 2 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$, we have

(a) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1-7 & \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} -1 & -3 \\ 1 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 1 & -7 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$

(d) $\begin{bmatrix} 4 & 2 \\ -5 & -7 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ -3 & -3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$

51) If X, A and B are matrices of the same order such that X = AB, then we apply elementary row transformations simultaneously on X and on the matrix

(a) B (b) A (c) AB (d) Both A and B

52) Matrices A and B will be inverse of each other only if

(a) AB = BA (b) AB = BA = 0 (c) AB = 0, (d) AB = BA = I

53) If A and B are square matrices of the same order and AB = 3I,then A^{-1} is equal to

(a) 3B (b) $\frac{1}{3}B$ (c) $3B^{-1}$ (d) $\frac{1}{3}B^{-1}$

54) If $\begin{bmatrix} 2x+y & 4x \\ 5x-7 & 4x \end{bmatrix} = \begin{bmatrix} 7 & 7y-13 \\ y & x+6 \end{bmatrix}$, then

(a) x = 3, y = 1 (b) x = 2, y = 3 (c) x = 2, y = 4 (d) x = 3, y = 3

55) If matrix $A = [a_{ij}]_{2\times 2}$, $where\ a_{ij} = \begin{cases} 1, \text{ if } i \neq j \\ 0, \text{ if } i = j \end{cases}$ Then A^2 is equal to

(a) I (b) A (c) 0 (d) None ofthese

56) The value of x such that

$$\begin{bmatrix} 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = O, \text{i}$$

(a) 1 (b) 0 (c) -1 (d) 3

57) For any two matrices A and B, we have

(a) AB=BA (b) AB ≠BA (c) AB = 0 (d) None of these

58) If A and B are symmetric matrices of same order, then (AB' - BA') is a

(a) skew-symmetric matrix (b) null matrix (c) symmetric matrix (d) unit matrix

59) If $F(x) = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, then F(x) F(y) is equal to

(a) F(x) (b) F(xy) (c) F(x + y) (d) F(x - y)

60) The matrix A satisfies the equation $\begin{bmatrix} 0 & 2 \\ -1 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then matrix A is

(a) $\begin{bmatrix} 2 & 0 \\ 1 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -2 \\ 1 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} \frac{1}{2} & -1 \\ \frac{1}{2} & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 2 \\ -1 & 0 \end{bmatrix}$

61) If $A = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ then A^6 is equal to

(a) zero matrix (b) A (c) I (d) none of these

62) If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ then A^2 - 5A - 7I iS

(a) a zero matrix (b) an identity matrix (c) diagonal matrix (d) none of these

63) A matrix has 18 elements, then possible number of orders of a matrix are

(a) 3 (b) 4 (c) 6 (d) 5

64) If matrix A is of order m x n, and for matrix B, AB and BA both are defined, then order of matrix B is

(a) m x n (b) n x n (c) n x n (d) n x m

65) The matrix $\begin{bmatrix} 2 & -1 & 4 \\ 1 & 0 & -5 \\ -4 & 5 & 7 \end{bmatrix}$ is

(a) a symmetric matrix (b) a skew-symmetric matrix (c) a diagonal matrix (d) none of these

66) If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ then the value of kif, $A^2 = kA - 2I$ is

(a) 0 (b) 8 (c) -7 (d) 1

4 x 1 = 4

67) If $A = \begin{bmatrix} 0 & a \\ 0 & 0 \end{bmatrix}$ then A^{16} is_____matrix.

68) If matrix X is such that $X \begin{bmatrix} 3 & 9 & -1 \\ 2 & 4 & 5 \end{bmatrix} = \begin{bmatrix} 1 & 3 & 0 \\ 2 & 1 & 5 \end{bmatrix}$ then order of matrix X is_____

69) If A and B are matrices of order 3 x m and 3 x n respectively such that m = n, then order of 2A + 7B is_____

70) If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ and $A + A' = I$ then value of a is_____

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