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ACADEMY FOR DDCET

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Practice Set 2 Solution

Mathematics

DETERMINANT AND MATRICES

Topics : 1. Determinant and its value up to 3rd order (Without properties). 2. Concept of a Matrix. 3. Types of Matrices. 4. Addition, Subtraction and multiplication by scalar of matrices. 5. Product of two matrices. 6. Adjoint and Inverse of a matrix of order 2X2. 7. Solution of Simultaneous linear equations of two variables

DDCET final exam weightage of this topic : 4 Question (8 Marks)

Total Practice sets of this topic : 2 (sets) x 30 (questions) = 60 Questions

Total Practice tests of this topic : 2 (exams) x 20 (questions) = 40 Questions

Offline / Online during lecture : 4 (lectures) X 50 (Questions) = 200 Question

DDCET 2025

Total 300 Questions to practice this topic

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Section 2:

1. Determinant
2. Matrices

1. Find the value of $\begin{vmatrix} e^{2x} & e^{x} \\ 1 & e^{-x} \end{vmatrix}$

a. 1
b. e^x
c. 0✓
d. e

2. $\begin{vmatrix} \log_6 2 & -1 \\ \log_6 3 & 1 \end{vmatrix}$ = _____

a. 1✓
b. -1
c. 0
d. 2

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

a. 2
b. -2✓
c. 4
d. -4

4. The determinant of Zero matrix is:

a. 1
b. 0✓
c. -1
d. Not define

5. Principal diagonal elements of $\begin{bmatrix} 2 & 6 \\ 5 & 3 \end{bmatrix}$ is:

a. (2,3)✓
b. (5,6)
c. (2,5)
d. (6,3)

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Section 2: 1. Determinant 2. Matrices

6. If $A = \begin{bmatrix} 4 & 3 \\ 2 & 6 \end{bmatrix}$, and $B = \begin{bmatrix} -3 & -1 \\ 5 & 5 \end{bmatrix}$, then find AB

a. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
b. $\begin{bmatrix} -3 & -11 \\ -24 & -28 \end{bmatrix}$
c. $\begin{bmatrix} 27 & 19 \\ 36 & 32 \end{bmatrix}$
d. $\begin{bmatrix} \mathbf{3} & \mathbf{11} \\ \mathbf{24} & \mathbf{28} \end{bmatrix}$ ✓

7. If $\begin{vmatrix} x & 1 & -2 \\ 4 & 4 & 2 \\ 1 & 3 & 1 \end{vmatrix} = 0$ then x = _____.

a. -9 ✓
b. 9
c. 1
d. 10

8. If $\begin{vmatrix} 2x & 6 \\ 6 & 2x \end{vmatrix} = 0$ then find the value of x.

a. ± 2
b. 3
c. ± 3 ✓
d. 1

9. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then A^2 =

a. $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$
b. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$
c. $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$
d. $\begin{bmatrix} \mathbf{1} & \mathbf{0} \\ \mathbf{0} & \mathbf{1} \end{bmatrix}$ ✓

10. The matrix [1 -2 3 4] is known as

a. Column Matrix
b. Singular Matrix
c. Row Matrix ✓
d. Non-singular Matrix

Section 2:
1. Determinant
2. Matrices

11. If A = [1 3 2] and B= $\begin{bmatrix}1\\2\\3\end{bmatrix}$ then AB =

a. [13]✓
b. Identity matrix
c. $\begin{bmatrix}1 & 3 & 2\\2 & 6 & 4\\3 & 3 & 2\end{bmatrix}$
d. Not possible

12. If order of matrix A is 3x4 and order of (AB) is 3x1 then order of matrix B is

a. 3 x 4
b. 4 x 1✓
c. 4 x 3
d. 1 x 4

13. If A=$\begin{bmatrix}20 & 40\\10 & 30\end{bmatrix}$ then 2A - $\frac{1}{10}$ A =

a. $\begin{bmatrix}\mathbf{38} & \mathbf{76}\\\mathbf{19} & \mathbf{57}\end{bmatrix}$**✓**
b. $\begin{bmatrix}20 & 40\\10 & 30\end{bmatrix}$
c. $\begin{bmatrix}-20 & -40\\-10 & -30\end{bmatrix}$
d. $\begin{bmatrix}-38 & 76\\19 & -57\end{bmatrix}$

14. If $\begin{bmatrix}x & 2\\y & 3\end{bmatrix}\begin{bmatrix}3\\2\end{bmatrix} = \begin{bmatrix}12\\12\end{bmatrix}$ then y =

a. 2✓
b. 0
c. 1
d. -2

15. If A = $\begin{bmatrix}2 & -4 & 1\\1 & 1 & 5\\7 & 2 & 3\end{bmatrix}$ then AI_3 =

a. A^{-1}
b. A✓
c. 0
d. 1

Section 2:
1. Determinant
2. Matrices

16. If A = $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$, then adj A= _____.

a. $\begin{bmatrix} d & b \\ c & a \end{bmatrix}$
b. $\begin{bmatrix} a & c \\ b & d \end{bmatrix}$
c. $\begin{bmatrix} -a & c \\ b & -d \end{bmatrix}$
d. $\begin{bmatrix} \boldsymbol{d} & \boldsymbol{-b} \\ \boldsymbol{-c} & \boldsymbol{a} \end{bmatrix}$ ✓

17. If A = $\begin{bmatrix} 3 & 4 \\ 2 & -1 \end{bmatrix}$, then adj A= _____.

a. $\begin{bmatrix} -1 & 2 \\ 4 & 3 \end{bmatrix}$
b. $\begin{bmatrix} \boldsymbol{-1} & \boldsymbol{-4} \\ \boldsymbol{-2} & \boldsymbol{3} \end{bmatrix}$ ✓
c. $\begin{bmatrix} -3 & 2 \\ 4 & 1 \end{bmatrix}$
d. $\begin{bmatrix} -1 & 4 \\ 2 & 3 \end{bmatrix}$

18. If A = $\begin{bmatrix} 4 & -3 \\ 7 & -2 \end{bmatrix}$, then adj A= _____.

a. $\begin{bmatrix} 4 & -3 \\ -7 & -2 \end{bmatrix}$
b. $\begin{bmatrix} \boldsymbol{-2} & \boldsymbol{3} \\ \boldsymbol{-7} & \boldsymbol{4} \end{bmatrix}$ ✓
c. $\begin{bmatrix} -2 & -3 \\ -7 & 4 \end{bmatrix}$
d. $\begin{bmatrix} -4 & 7 \\ -3 & 2 \end{bmatrix}$

19. If A = $\begin{bmatrix} -8 & 10 \\ -4 & 5 \end{bmatrix}$, then A^{-1} = _____.

a. $\begin{bmatrix} 5 & -4 \\ 10 & 8 \end{bmatrix}$
b. $\begin{bmatrix} -8 & 10 \\ 4 & 5 \end{bmatrix}$
c. $\begin{bmatrix} 5 & -10 \\ -4 & 8 \end{bmatrix}$
d. A^{-1} does not exist ✓

Section 2:
1. Determinant
2. Matrices

20. If $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$, then A^{-1} = _____.

a. $\frac{1}{5}\begin{bmatrix} 4 & -3 \\ -1 & 2 \end{bmatrix}$ ✓
b. $\frac{1}{5}\begin{bmatrix} 2 & -3 \\ -1 & 4 \end{bmatrix}$
c. $\frac{1}{5}\begin{bmatrix} -2 & 1 \\ 3 & -4 \end{bmatrix}$
d. $\frac{1}{5}\begin{bmatrix} 4 & 3 \\ 1 & 2 \end{bmatrix}$

21. Which of the following matrices is singular (i.e., does not have an inverse)?

a. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
b. $\begin{bmatrix} 2 & 4 \\ 1 & 2 \end{bmatrix}$ ✓
c. $\begin{bmatrix} 5 & -3 \\ 2 & 7 \end{bmatrix}$
d. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

22. If $A = \begin{bmatrix} 1 & 3 \\ 6 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & -2 \\ 4 & 3 \end{bmatrix}$, then $(A+B)^{-1}$ = _____.

a. $\frac{1}{38}\begin{bmatrix} 6 & -1 \\ -10 & 8 \end{bmatrix}$
b. $\frac{1}{38}\begin{bmatrix} -6 & 1 \\ 10 & -8 \end{bmatrix}$
c. $\frac{1}{38}\begin{bmatrix} 8 & -1 \\ -10 & 6 \end{bmatrix}$ ✓
d. $\frac{1}{38}\begin{bmatrix} 8 & -1 \\ -10 & 6 \end{bmatrix}$

23. If $A = \begin{bmatrix} 6 & 3 \\ 8 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & -2 \\ 4 & 3 \end{bmatrix}$, then $(A-B)^{-1}$ = _____.

a. $\frac{1}{18}\begin{bmatrix} -2 & 5 \\ 4 & -1 \end{bmatrix}$ ✓
b. $\frac{1}{18}\begin{bmatrix} 2 & -5 \\ -4 & 1 \end{bmatrix}$
c. $\frac{-1}{18}\begin{bmatrix} 2 & 5 \\ 4 & 1 \end{bmatrix}$
d. $\frac{-1}{18}\begin{bmatrix} -2 & 5 \\ 4 & -1 \end{bmatrix}$

Section 2:
1. Determinant
2. Matrices

24. If AB = I then matrix B = _____.

a. adjA
b. A^T
c. A^{-1}✓
d. I

25. If $A = \begin{bmatrix} 1 & 3 & 2 \\ 4 & 2 & 1 \\ 2 & 5 & 3 \end{bmatrix}$ then |A| = _____.

a. -5
b. 5
c. 3✓
d. -3

26. If $A = \begin{bmatrix} 2 & 4 & 1 \\ 3 & 1 & 5 \\ 6 & 2 & 3 \end{bmatrix}$ then find |A| = _____.

a. -10
b. 70✓
c. 60
d. 15

27. For square matrix A, if A^{-1} = adjA then |A| = _____.

a. 1✓
b. 0
c. -1
d. Does not exist

28. If A^{-1} exists, then which of the following is always true?

a. A is singular
b. det(A)≠0
c. $A^T=A^{-1}$
d. $A^2=I$

Section 2:
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2. Matrices

29. If the inverse of matrix $A = \begin{bmatrix} 2 & 1 \\ 4 & 3 \end{bmatrix}$ is given by $A^{-1} = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ then find the value of a and d.

a. a = -1.5 and d = -1
b. a = 1.5 and d = 1
c. a = 1.5 and d = -1
d. a = 1 and d = 1.5

30. Which of the following matrices has no inverse?

a. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
b. $\begin{bmatrix} -2 & -4 \\ 1 & 2 \end{bmatrix}$
c. $\begin{bmatrix} 5 & -2 \\ 2 & 3 \end{bmatrix}$
d. $\begin{bmatrix} 1 & 0 \\ -1 & 0 \end{bmatrix}$