Exercises 2

MATH 244

LINEAR ALGEBRA

Given the matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, what is the minor M_{11}?

- A. 4
- B. 3
- C. 2
- D. 1

Multiple Choice

Which of the following is true about the determinant of a triangular matrix?

- A. It is the product of the diagonal entries.
- B. It is the sum of the diagonal entries.
- C. It is always zero.
- D. It is the product of the off-diagonal entries.

Multiple Choice

Which of the following operations does NOT change the determinant of a matrix?

- A. Swapping two rows.
- B. Multiplying a row by a scalar.
- C. Adding a multiple of one row to another.
- D. Multiplying a column by a scalar.

Multiple Choice

If A is a 3×3 matrix and $|A| = 5$, what is $|2A|$?

- A. 10
- B. 40
- C. 20
- D. 30

Multiple Choice

If A is a 2×2 matrix with $|A| = 3$, what is $|A^{-1}|$?

- A. $\frac{1}{3}$
- B. 3
- C. -3
- D. 0

Multiple Choice

Which of the following is true about the adjoint of a matrix?

- A. It is the transpose of the cofactor matrix.
- B. It is the inverse of the matrix.
- C. It is the determinant of the matrix.
- D. It is the sum of the diagonal entries.

Multiple Choice

Given $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, what is the adjoint of A?

- A. $\begin{bmatrix} 4 & -2 \\ -3 & 1 \end{bmatrix}$
- B. $\begin{bmatrix} 4 & -3 \\ -2 & 1 \end{bmatrix}$
- C. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
- D. $\begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$

Multiple Choice

If A is a 3×3 matrix with $|A| = 2$ and B is a 3×3 matrix with $|B| = 3$, what is $|AB|$?

- A. 6
- B. 5
- C. 1
- D. 0

Multiple Choice

True or False?

If A is a square matrix whose minors are all zero, then $\det(A) = 0$.

A)True.

B)False.

Multiple Choice

True or False?

For all square matrices A and B, it is true that

$$\det(A + B) = \det(A) + \det(B)$$

A)True.

B)False.

Multiple Choice

True or False?

For every 2×2 matrix A it is true that $\det(A^2) = (\det(A))^2$.

A)True.

B)False.

Multiple Choice

True or False?

If A is a square matrix with two identical columns, then $\det(A) = 0$.

A)True.

B)False.

Multiple Choice

True or False?

If A is an $n \times n$, $n \geq 2$ then

$$\det[\text{adj}(A)] = [\det(A)]^{n-1}$$

A)True.

B)False.

Multiple Choice

True or False?

If A is invertible, then adj(A) must also be invertible.

A)True.

B)False.

Multiple Choice

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
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A	A	C	B	A	A	A	A	A	B	A	A	A	A