Key
Form A

Instructor: Dr. Ala Talahmeh

Time: 10 minutes

Name:......................................

First Semester 2022/2023

Date: 5/12/2022

Number:..............

Exercise#1 [10 marks]. Answer the following statements as **True** or **False**.

1. (.....T....) If A is singular and U is the row echelon form of A, then U is singular.

2. (.....T....) $(AB)C = A(BC)$ for all matrices A, B, and C when multiplication is allowed.

3. (.....F....) If A and B are $n \times n$ matrices and A is nonsingular, then AB is singular.

4. (.....T....) If A and B are $n \times n$ are nonsingular matrices, then $B^T A^{-1}$ is nonsingular.

5. (.....F....) If y and z are both solutions to $Ax = b$, then $y = z$.

6. (.....T....) If $A^T A = A$, then $A^4 = A$.

7. (.....T....) If A is an $n \times n$ matrix, then $A - A^T$ is skew-symmetric.

8. (.....T....) If B is $n \times n$ nonsingular matrix, then $AB = BA$ if and only if $AB^{-1} = B^{-1}A$

9. (.....F....) Let A be a 4×3 matrix. If $b = a_1 + a_2 - a_3$, then the linear system $Ax = b$ will have infinitely many solutions.

10. (.....T....) If A and B are $n \times n$ are matrices with $AB = O$ and A is nonsingular, then B must equal zero matrix.

Good Luck

Key
Form B

Birzeit University
Mathematics Department
Math234-Section (1)
Quiz#2

Instructor: Dr. Ala Talahmeh

Time: 10 minutes

Name:..

First Semester 2022/2023

Date: 5/12/2022

Number:..............

Exercise#1 [10 marks]. Answer the following statements as **True** or **False.**

1. (......F.....) If A is singular and U is the row echelon form of A, then U is nonsingular.

2. (......F.....) $(AB)C = A(CB)$ for all matrices A, B, and C when multiplication is allowed.

3. (......F.....) If A and B are $n \times n$ matrices and A is nonsingular, then AB is nonsingular.

4. (......T.....) If A and B are $n \times n$ are nonsingular matrices, then $B^T A^{-1}$ is nonsingular.

5. (......T.....) If A is invertible and y, z are both solutions to $Ax = b$, then $y = z$.

6. (......F.....) If $A^T A = A$, then $A^2 = I$.

7. (......F.....) If A is an $n \times n$ matrix, then $A + A^T$ is skew-symmetric.

8. (......T.....) If B is $n \times n$ nonsingular matrix, then $AB = BA$ if and only if $AB^{-1} = B^{-1}A$

9. (......F.....) Let A be a 3×3 matrix. If $b = a_1 + a_2 - a_3$, then the linear system $Ax = b$ will have infinitely many solutions.

10. (......T.....) If A and B are $n \times n$ are matrices with $AB = O$ and A is nonsingular, then B must equal zero matrix.

Good Luck

Key
Form A

Exercise#1 [10 marks]. Answer the following statements as **True** or **False**.

1. (......T.....) If A and B are $n \times n$ are nonsingular matrices, then ABA^{-1} is nonsingular.

2. (......T.....) If A is a 4×4 invertible matrix, then AA^T is both symmetric and nonsingular.

3. (......T.....) Let A be a 3×4 matrix. If $b = a_1 + a_2 - a_3$, then the linear system $Ax = b$ will have infinitely many solutions.

4. (......T.....) If A is an $n \times n$ invertible matrix and k is any nonzero scalar, then $(kA)^{-1} = k^{-1}A^{-1}$.

5. (......T.....) If A is an $m \times n$ matrix such that $AA^T = O$, then $A = O$.

6. (......F.....) If A and B are any $n \times n$ symmetric matrices, then $A(B - I)$ is skew-symmetric.

7. (......F.....) If A and B are any $n \times n$ matrices such that $AB = I$, then A and B are both singular.

8. (......F.....) If AB is equal to the identity matrix, then A must be invertible matrix.

9. (......T.....) If A is an $m \times n$ and B is a $p \times q$ matrices such that $AB = BA$, then $n = p$ and $m = q$.

10. (......T.....) If A is a 3×3 matrix and $a_1 = a_2$, then $(\alpha, -\alpha, 0)$ is a solution of the linear system $Ax = 0$, for every $\alpha \in \mathbb{R}$.

Good Luck

Key
Form B

Instructor: Dr. Ala Talahmeh
Time: 10 minutes
Name:...
Number:...............

Exercise#1 [10 marks]. Answer the following statements as **True** or **False**.

1. (.....F.....) If A and B are $n \times n$ are nonsingular matrices, then ABA^{-1} is singular.

2. (.....F.....) If A is a 4×4 invertible matrix, then AA^T is both symmetric and singular.

3. (.....T.....) Let A be a 3×4 matrix. If $b = a_1 + a_2 - a_3$, and $a_1 = a_2$, then the linear system $Ax = b$ will have infinitely many solutions.

4. (.....F.....) If A is an $n \times n$ invertible matrix and k is any nonzero scalar, then $(kA)^{-1} = kA^{-1}$.

5. (.....T.....) If A is an $m \times n$ matrix such that $AA^T = O$, then $A = O$.

6. (.....F.....) If A and B are any $n \times n$ symmetric matrices, then $A(B - I)$ is also symmetric.

7. (.....T.....) If A and B are any $n \times n$ matrices such that $AB = I$, then A and B are both nonsingular.

8. (.....F.....) If AB is equal to the identity matrix, then A must be singular matrix.

9. (.....T.....) If A is an $m \times n$ and B is a $p \times q$ matrices such that $AB = BA$, then $n = m = p = q$.

10. (.....F.....) If A is a 3×3 matrix and $a_1 = a_2$, then $(\alpha, \alpha, 0)$ is a solution of the linear system $Ax = 0$, for every $\alpha \in \mathbb{R}$.

Good Luck