*10 questions
*Calculators and notes allowed
*Show all work/steps- use separate paper
*Recommend time frame 15min -20min

Concept of Matrices and Determinants

1. True or false: a determinant is just a number associated with every square matrix?

    a. True

    b. False

2. *Can a (2×5) matrix be mutiplied by a (2×3) matrix?*

    a. Yes, always

    b. Never

    c. Yes, sometimes

3. Name two methods to solve a system that involve matrices?

    a. Graphing and substitution method

    b. Elimination and substitution method

    c. Inverse matrix and Cramer's Rule

    d. Determinants and Scalar method

Operations with Matrices

perform the following matrix operations- show all your work.

4. $-3\begin{bmatrix} 12 & -8 \\ 0 & 1 \end{bmatrix}$

    a. $\begin{bmatrix} 9 & -11 \\ -3 & -2 \end{bmatrix}$

    b. $\begin{bmatrix} -36 & 24 \\ 0 & -3 \end{bmatrix}$

    c. $\begin{bmatrix} -4 & 1 \\ 0 & 3 \end{bmatrix}$

    d. $\begin{bmatrix} 14 & -13 \\ -13 & 5 \end{bmatrix}$

5. $\begin{bmatrix} 4 & -7 \\ 2 & 5 \end{bmatrix} - \begin{bmatrix} 3 & -10 \\ 0 & -3 \end{bmatrix}$

    a. $\begin{bmatrix} -3 & 1 \\ 2 & 3 \end{bmatrix}$

    b. $\begin{bmatrix} -4 & 1 \\ -4 & 0 \end{bmatrix}$

    c. $\begin{bmatrix} 7 & 11 \\ 21 & 6 \end{bmatrix}$

    d. $\begin{bmatrix} 1 & 3 \\ 2 & 8 \end{bmatrix}$

6. $\begin{bmatrix} -3 & 1 \\ 2 & 3 \end{bmatrix} x \begin{bmatrix} -5 & 4 \\ -1 & -1 \end{bmatrix}$

    a. $\begin{bmatrix} -15 & 4 \\ -2 & -3 \end{bmatrix}$

    b. $\begin{bmatrix} -8 & 5 \\ -1 & 2 \end{bmatrix}$

    c. $\begin{bmatrix} -3 & 1 \\ 2 & 3 \end{bmatrix}$

    d. $\begin{bmatrix} 14 & -13 \\ -13 & 5 \end{bmatrix}$

Determinants

7. *find the determinant of the following matrix* $\begin{bmatrix} 34 & -2 \\ 17 & -1 \end{bmatrix}$

    a. -34

    b. 0

    c. 34

    d. -68

8. *What are the two methods that can be used to find the determinant of a* $(3x3)$ *matrix?*

    a. Cramer's Rule and Diagonal method

    b. Diagonal Method and Expansion of minors

    c. Matrix and scalar multiplication

    d. None of the above

<u>Identity and Inverse Matrices</u>

9. *Find the inverse matrix of* $\begin{bmatrix} 2 & -3 \\ -1 & 2 \end{bmatrix}$

    a. $\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$

    b. $\begin{bmatrix} -1 & 2 \\ 2 & -3 \end{bmatrix}$

    c. $\begin{bmatrix} 2 & -1 \\ -3 & 2 \end{bmatrix}$

    d. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

Solving Systems Using Matrices

10. *Solve the system using Cramer's Rule*

$$\begin{cases} 4x - 5y = 3 \\ -3x + 7y = 1 \end{cases}$$

    a. $x = 1 \ y = 2$

    b. $x = 2 \ y = 2$

    c. $x = 2 \ y = 1$

    d. $x = 5 \ y = 3$