



- *17 questions
- *Calculators allowed
- *Show all work/steps- use separate paper
- *Recommend time frame 30min -45min

Concept of Matrices and Determinants

1. Would you consider information in a spreadsheet (ex. Microsoft Excel) a matrix? explain
2. True or false: a determinant is just a number associated with every square matrix?
3. *Can a (2 x 3) matrix be multiplied by another (2 x 3) matrix? explain*
4. What is the Identity Matrix for a (2 x 2) matrix?
5. Name two methods to solve a system that involve matrices?

Operations with Matrices

perform the following matrix operations- show all your work.

6. $2 \begin{bmatrix} 3 & 0 \\ 1 & 5 \end{bmatrix} + \begin{bmatrix} 7 & -2 \\ 4 & -9 \end{bmatrix}$

7. $\begin{bmatrix} 6 & -2 \\ 2 & 11 \end{bmatrix} - \begin{bmatrix} 1 & -19 \\ 0 & 23 \end{bmatrix}$

8. $\begin{bmatrix} 5 & 9 \\ 1 & 1 \end{bmatrix} \times \begin{bmatrix} 3 & -3 \\ 8 & 5 \end{bmatrix}$

9. $\begin{bmatrix} 4 & 0 \\ -4 & 5 \end{bmatrix} \times \begin{bmatrix} 2 & -2 \\ 1 & -3 \end{bmatrix}$

$$10. \begin{bmatrix} 2 & -1 & 0 \\ 4 & 7 & 1 \end{bmatrix} \times \begin{bmatrix} 1 & 1 \\ 3 & 0 \\ 5 & 5 \end{bmatrix}$$

Determinants

find the determinants of the following matrices

$$11. \begin{bmatrix} 7 & 7 \\ 1 & 5 \end{bmatrix}$$

$$12. \begin{bmatrix} 3 & -2 \\ 6 & 3 \end{bmatrix}$$

$$13. \begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & 1 \\ 0 & 5 & 4 \end{bmatrix}$$

Identity and Inverse Matrices

14. *Are the following matrices inverses on each other? show your work*

$$\begin{bmatrix} -3 & 3 \\ 3 & -3 \end{bmatrix} \text{ and } \begin{bmatrix} 3 & -3 \\ -3 & 3 \end{bmatrix}$$

15. *Find the inverse matrix of* $\begin{bmatrix} 4 & 2 \\ 1 & -1 \end{bmatrix}$

Solving Systems Using Matrices

16. *Solve the system using Inverse Matrices*

$$\begin{cases} -x + y = -6 \\ 2x + 2y = 0 \end{cases}$$

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

$$\begin{cases} -3x + y = -3 \\ 5x - 2y = 10 \end{cases}$$