

Pre-Calculus 1
Matrix Review #3

Name _____

1. Find the determinant of the following matrix using any method:

$$\begin{bmatrix} -4 & 10 & 12 \\ -1 & 9 & 0 \\ 2 & 20 & -2 \end{bmatrix}$$

2. Find the value of x if $\begin{vmatrix} -6x & 5 \\ 3x & -1 \end{vmatrix} = 18$

3. Find the value of x in the following matrix if the determinant is equal to -22:

$$\begin{bmatrix} -3 & x & -1 \\ 0 & 4 & -2 \\ 2 & 1 & 0 \end{bmatrix}$$

4. If $A = \begin{bmatrix} -3 & 5 \\ 9 & -7 \end{bmatrix}$, find $|A|$.

5. Solve for matrix X : $\begin{bmatrix} 2 & 22 \\ 77 & -105 \end{bmatrix} \cdot X = \begin{bmatrix} 2 & 22 \\ 77 & -105 \end{bmatrix}$

6. Solve for x :
$$\begin{bmatrix} 5 & -7 \\ 8 & 10 \end{bmatrix} \cdot \begin{bmatrix} 8 & 2 \\ x & 3 \end{bmatrix} = \begin{bmatrix} -9 & -11 \\ 134 & 46 \end{bmatrix}$$

7. Given that $J = \begin{bmatrix} 5 & -6 \\ -4 & 7 \end{bmatrix}$ and $K = \begin{bmatrix} 3 & -1 \\ 0 & 2 \end{bmatrix}$, solve for matrix X if $2J + X = K$

8. Solve for $x, y,$ and z :
$$\begin{bmatrix} -4 & y \\ 0 & 46 \end{bmatrix} = \begin{bmatrix} x & 17 \\ 0 & z+9 \end{bmatrix}$$

9. Given that $F = \begin{bmatrix} 0 & 3 \\ 3 & 6 \\ -3 & 6 \end{bmatrix}$, find F^t .

10. Use Cramer's Rule to solve the following system:

$$-3x - y = 20$$

$$8x + 4y = -10$$

11. Use Cramer's Rule to solve the following system:

$$x - 2y + 10z = -100$$

$$4x + 3y - 3z = 12$$

$$7x + 5y - 15z = -22$$

12. Simplify: $-5 \left(\begin{bmatrix} -2 & -20 \\ 3 & 1 \\ -10 & 12 \end{bmatrix} + \begin{bmatrix} 15 & -75 \\ 103 & 22 \\ 11 & 77 \end{bmatrix} \right)$

13. Simplify: $\begin{bmatrix} 3 & -4 \\ 6 & -10 \\ -4 & 10 \end{bmatrix}^T - \begin{bmatrix} 20 & -100 & 24 \\ 45 & 76 & 22 \end{bmatrix}$

14. Simplify: $\begin{bmatrix} 4 & 2 & -1 \\ 12 & -1 & 0 \\ 3 & 4 & 9 \end{bmatrix} \cdot \begin{bmatrix} -2 & 2 & -1 \\ -4 & 3 & 5 \\ 0 & 7 & 3 \end{bmatrix}$

15. The determinant of $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ is:

a. 0

b. 1

c. 2

d. 3

e. Not Defined.

16. Solve each of the following for Matrix X.

a. $\begin{bmatrix} 6 & 7 \\ 4 & -3 \end{bmatrix} X - \begin{bmatrix} -9 \\ 11 \end{bmatrix} = \begin{bmatrix} -30 \\ -20 \end{bmatrix}$

b. $\frac{1}{4}X + \begin{bmatrix} 23 & -8 & 0 \\ -11 & 5 & -13 \end{bmatrix} = \begin{bmatrix} 15 & -12 & 2 \\ -4 & 0 & -5 \end{bmatrix}$