

Test On Matrices (Pre Calculus) In-class

Name _____

Section 1: Determining Consistent, Inconsistent and Dependent, Independent Lines

Consider the system of equations and identify the relationship as indicated above.

$$2x - 3y = 11$$

1. $y = \frac{4}{5}x + 2$ 1. _____

$$x - 5y = 15$$

2. $y = \frac{1}{5}x + 2$ 2. _____

$$6x + 7y = 14$$

3. $y = \frac{-6}{7}x + 2$ 3. _____

Section 2: Solving Systems with Augmented Matrices

Write an **augmented matrix** for the system of equations then **solve** using the **reduced row echelon form** option in the calculator. **Rational solutions** should be represented as **proper fractions** or **mixed numbers** when appropriate.

$$4x + y - 6z = -1$$

4. $8x + 3y - 3z = -2$ 4. _____
 $12x - 5y + 9z = 25$

Solution: _____

$$2x - 8y + 10z = -11$$

5. $10x + 12y - 15z = 48$ 5. _____
 $4x - 4y + 5z = 2$

Solution: _____

Section 2: Operations with Matrices

Given the Following Matrices, complete the indicated operations.

$$A = \begin{bmatrix} 5 & -2 \\ 3 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 9 & -3 \\ -1 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 5 & 8 & -6 \\ -2 & -4 & 10 \end{bmatrix} \quad D = \begin{bmatrix} -3 & -4 & -4 & 2 \\ 6 & -7 & 11 & 3 \\ 5 & 6 & 9 & 14 \end{bmatrix}$$

$$E = \begin{bmatrix} -2 & 3 & 1 & 1 \\ 5 & 6 & 7 & -11 \\ -5 & 8 & -7 & -3 \end{bmatrix} \quad F = \begin{bmatrix} -3 & -2 & 4 & 2 \\ 3 & 3 & 6 & -2 \\ -1 & -6 & 7 & 13 \end{bmatrix} \quad G = \begin{bmatrix} -6 & 5 & -3 \\ -2 & -1 & 4 \end{bmatrix}$$

6. Find $3E - 4F$

6.



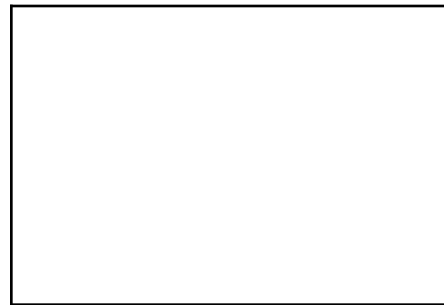
7. Find **Matrix X** if $4X + 3C = 2G$

7.



8. Find **Matrix K** if $CE + 3G[F + D] = BK$

8.



9. Find $|A| + 5|B|$
(Determinant of A plus five times determinant of B)

9. _____

10. Solve the system of equations generated from these determinants.

$$\begin{vmatrix} 2x+3 & 4 \\ 4y-3 & -5 \end{vmatrix} = 8 \qquad \begin{vmatrix} 5x+3 & -2 \\ 2y-5 & -3 \end{vmatrix} = -11$$

10. _____

11. Solve the system of equations generated from these determinants.

$$\begin{vmatrix} 6 - \frac{1}{2}x & 5 \\ y+2 & 3 \end{vmatrix} = 3\frac{1}{4} \qquad \begin{vmatrix} 2 - \frac{3}{4}x & -3 \\ \frac{1}{3}y+2 & 5 \end{vmatrix} = -2\frac{1}{3}$$

11. _____

12. Find the area of the triangle with vertices at $(-2, 5)$, $(3, 7)$, $(11, 0)$

12. _____

13. Find the area of the triangle with vertices at $(7, 3)$, $(1, -2)$, $(4, 5)$

13. _____

14. Solve the matrix Equation $\begin{bmatrix} -2 & 3 & 5 \\ 7 & -2 & 1 \\ 4 & 1 & 7 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 8 \\ -1 \\ 4 \end{bmatrix}$

14. _____

15. Solve the matrix Equation $\begin{bmatrix} -1 & 3 & 4 \\ 10 & -6 & 1 \\ 4 & 6 & 2 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} - 3 \begin{bmatrix} 5 & 3 & 5 \\ 4 & -2 & 9 \\ 9 & 1 & 4 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 22 \\ -6 \\ 3 \end{bmatrix}$

15. _____