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.

1. $2x - 3y = 11$
   $y = \frac{4}{5}x + 2$
   1. _____

2. $x - 5y = 15$
   $y = \frac{1}{5}x + 2$
   2. _____

3. $6x + 7y = 14$
   $y = \frac{-6}{7}x + 2$
   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.

4. $4x + y - 6z = -1$
   $8x + 3y - 3z = -2$
   $12x - 5y + 9z = 25$
   4.

   Solution:_____

5. $2x - 8y + 10z = -11$
   $10x + 12y - 15z = 48$
   $4x - 4y + 5z = 2$
   5.

   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 $4\mathbf{X} + 3C = 2G$

7.

8. Find **Matrix K** if $CE+3G[\ F + D\ ]=B\mathbf{K}$

8.

9. Find $|A|+5|B|$

9. _____

(Determinant of A plus five times determinant of B)

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 $\begin{bmatrix} -2 & 3 & 5 \\ 7 & -2 & 1 \\ 4 & 1 & 7 \end{bmatrix} \bullet \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 8 \\ -1 \\ 4 \end{bmatrix}$

14. _____

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

15. _____