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. $3x - 4y = 20$
   $y = \frac{3}{4}x - 5$
   1. _____

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

3. $x + 3y = 15$
   $y = \frac{-1}{3}x + 2$
   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. $6x - y + 2z = 6$
   $9x + 4y - 4z = 0$
   $12x - 7y + 8z = 19$
   4.

   Solution:_____

5. $4x - 5y + 3z = -9$
   $6x + 20y - 2z = 28$
   $8x - 10y + 9z = -27$
   5.

   Solution:_____

Section 2: Operations with Matrices

Given the Following Matrices, complete the indicated operations.

$$A=\begin{bmatrix}2 & -5\\ 4 & 3\end{bmatrix} \quad B=\begin{bmatrix}6 & -8\\ -2 & 4\end{bmatrix} \quad C=\begin{bmatrix}6 & 8 & -4\\ 2 & -4 & 10\end{bmatrix} \quad D=\begin{bmatrix}-2 & -4 & -4 & 2\\ 6 & -8 & 12 & 4\\ 4 & 6 & 8 & 14\end{bmatrix}$$

$$E=\begin{bmatrix}-5 & 2 & -4 & 1\\ 3 & 6 & 7 & -13\\ -5 & 8 & -7 & -2\end{bmatrix} \quad F=\begin{bmatrix}-3 & -1 & 5 & 7\\ 5 & 3 & 11 & -3\\ -1 & -9 & 7 & 15\end{bmatrix} \quad G=\begin{bmatrix}-7 & 3 & -5\\ -3 & -9 & 1\end{bmatrix}$$

6. Find 4E –5F+2D

6.

7. Find **Matrix Y** if $2\mathbf{X} + 3C = 4G$

7.

8. Find **Matrix L** if $GD–C[\ 2F + 4D\ ]=B\mathbf{L}$

8.

9. Find $3|A|-5|B|$

9. _____

(Three times determinant of A minus five times determinant of B)

10. Solve the system of equations generated from these determinants. **(Integer Coordinates)**

$$\begin{vmatrix} 3x-2 & 3 \\ 5y+7 & -2 \end{vmatrix} = 25 \qquad \begin{vmatrix} 4x-7 & -2 \\ y+3 & 3 \end{vmatrix} = 13$$

10. _____

11. Solve the system of equations generated from these determinants. **(Integer Coordinates)**

$$\begin{vmatrix} 4-\frac{1}{3}x & -4 \\ 2y+3 & \frac{1}{3} \end{vmatrix} = 4\frac{1}{3} \qquad \begin{vmatrix} \frac{1}{2}x-4 & -3 \\ \frac{1}{3}y+5 & 4 \end{vmatrix} = 16$$

11. _____

12. Find the area of the triangle with vertices at (–3 , 9) , (8, 2), (5, 3)

12. _____

13. Find the area of the triangle with vertices at (11 , 5) , (9, –2), (–2, 3)

13. _____

14. Solve the matrix Equation $\begin{bmatrix} -4 & 1 & 3 \\ 2 & -3 & 5 \\ 5 & 6 & -2 \end{bmatrix} \bullet \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -17 \\ 29 \\ 3 \end{bmatrix}$

(Integer Solutions) 14. _____

15. Solve the matrix Equation $2\begin{bmatrix} 3 & -2 & 3 \\ 5 & -3 & 7 \\ 4 & 5 & 9 \end{bmatrix} \bullet \begin{bmatrix} x \\ y \\ z \end{bmatrix} - 3\begin{bmatrix} 8 & -2 & 4 \\ 6 & -8 & 7 \\ 3 & 11 & -3 \end{bmatrix} \bullet \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -34 \\ 28 \\ -189 \end{bmatrix}$

(Integer Solutions) 15. _____