

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.



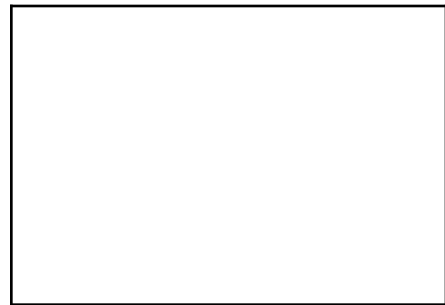
7. Find **Matrix Y** if $2X + 3C = 4G$

7.



8. Find **Matrix L** if $GD - C[2F + 4D] = BL$

8.



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

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

9. _____

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 $\begin{bmatrix} -4 & 1 & 3 \\ 2 & -3 & 5 \\ 5 & 6 & -2 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -17 \\ 29 \\ 3 \end{bmatrix}$

(Integer Solutions)

14. _____

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

(Integer Solutions)

15. _____