MATH. 204.
MIDTERM EXAMINATION.

1. Solve by Cramer's Rule only. Eac

$$\begin{aligned} -x + 2y - 3z &= 1 \\ 2x \quad\quad + z &= 0 \\ 3x - 4y + 4z &= 2 \end{aligned}$$

2. Compute the determinant of A.

$$A = \begin{bmatrix} 1 & -2 & 3 & 1 \\ 4 & -6 & 3 & 2 \\ -2 & 4 & -9 & -3 \\ 3 & -6 & 9 & 2 \end{bmatrix}$$

3. Compute the inverse of A.

$$A = \begin{bmatrix} 1 & 1 & 2 \\ 3 & 1 & 0 \\ -2 & 0 & 3 \end{bmatrix}$$

4. If $(2A - 5I)^{-1} = \begin{bmatrix} 5 & -4 \\ 2 & 1 \end{bmatrix}$, determine A.

5. Determine the values of a and b, such that the given system of equations have:
   (1) exactly one solution.
   (2) no solutions.
   (3) infinite solutions.

$$\begin{aligned} x + 2y &= 3 \\ ax + by &= -9 \end{aligned}$$

6. Solve the System of Equations:

$$2x_1 + x_2 + x_3 + 2x_4 = -1$$

$$5x_1 - 2x_2 + x_3 - 3x_4 = 0$$

$$-x_1 + 3x_2 + 2x_3 + 2x_4 = 1$$

$$3x_1 + 2x_2 + 3x_3 - 5x_4 = 12$$