ALGEBRA 2 HONORS
PROBLEM SET #11

DUE DATE: OCTOBER 2, 2023

Question 1. Solve the following system of linear equations ***using any method***:

$$\begin{aligned} 2x + y + z &= 4 \\ y + z &= 2 \\ z &= 2 \end{aligned}$$

Question 2. Solve for the matrix A in the following equation:

$$\begin{bmatrix} 3 & -8 \\ 10 & 5 \\ -1 & 4 \end{bmatrix} - A = \begin{bmatrix} 2 & 8 \\ -1 & 12 \\ 0 & 1 \end{bmatrix}$$

Question 3. Compute the product or state it is not possible.

$$\begin{bmatrix} 2 & 6 \\ 1 & 0 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} -4 & 6 & 1 & 3 \\ 9 & -8 & 10 & 7 \end{bmatrix}$$

Question 4. Let $A = \begin{bmatrix} 3 & 2 \\ -1 & 5 \end{bmatrix}$.

(a) Compute the determinant of A.
(b) Does A have an inverse?
(c) Solve for the matrix B in the equation

$$\begin{bmatrix} 3 & 2 \\ -1 & 5 \end{bmatrix} B = \begin{bmatrix} -10 & -11 \\ 26 & -36 \end{bmatrix}$$

Question 5. Using **Cramer's rule**, solve for the point of intersection for the following set of equations:

$$\begin{aligned} 2x + 3y &= 3 \\ x - 2y &= 5 \end{aligned}$$

Question 6. Come up with an example where two nonzero matrices A, B where

$$A \text{ or } B \neq \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \text{ but } AB = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$