ALGEBRA 2 HONORS
PROBLEM SET #10

DUE DATE: SEPTEMBER 28, 2023

Question 1. Compute the resulting matrix:

(a) $\begin{bmatrix} 1 & 2 & 3 \\ 3 & -1 & 7 \end{bmatrix} + 2 \begin{bmatrix} 0 & -1 & 3 \\ 2 & 3 & 1 \end{bmatrix} =$

(b) $\begin{bmatrix} 2 \\ 0 \end{bmatrix} \begin{bmatrix} 2 & 3 \end{bmatrix} =$

(c) $\begin{bmatrix} 2 & 0 \end{bmatrix} \begin{bmatrix} 2 \\ 3 \end{bmatrix} =$

(d) $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & -1 \end{bmatrix} \begin{bmatrix} 3 & -1 \\ 2 & 0 \\ 0 & 1 \end{bmatrix} =$

Question 2. Solve for the solutions of x, y, z, w from the equations

$$\begin{cases} x + y + z + w = 13 \\ 2x + y + z + w = 18 \\ x + 2y + z + w = 16 \\ w = 4 \end{cases}$$

(use the three rules to get to $\left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & a \\ 0 & 1 & 0 & 0 & b \\ 0 & 0 & 1 & 0 & c \\ 0 & 0 & 0 & 1 & d \end{array}\right]$.)

Question 3. Use **Cramer's rule** to solve the system of equations

$$12x - 3y = 5$$
$$15x + 2y = 10$$

Question 4. Let $A = \begin{bmatrix} 1 & 2023 \\ 0 & 1 \end{bmatrix}$ and let $B = \begin{bmatrix} 1 & -2023 \\ 0 & 1 \end{bmatrix}$.

(a) Compute AB.
(b) Compute BA.
(c) What can you conclude about B?