ALGEBRA 2
PROBLEM SET #10

DUE DATE: SEPTEMBER 28, 2023

Question 1. Solve the following system of equations using any method you like:

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

Question 2. Solve the following system of equations using any method you like:

$$\begin{aligned} 4x - 5y &= 8 \\ 5y &= 24 \end{aligned}$$

Question 3. Identify whether the following statements are **True** or **False** by circling your answer. If the answer is false, what would the correct matrix look like?

(a) TRUE or FALSE

The matrix representation of the system of linear equation

$$\begin{cases} 2x + 3y = 4 \\ y - x = 7 \end{cases} \quad \text{is} \quad \left[\begin{array}{cc|c} 2 & 3 & 4 \\ 1 & -1 & 7 \end{array}\right]$$

(b) TRUE or FALSE

The matrix representation of the system of linear equation

$$\begin{cases} 2x + y + z = 4 \\ y + z = 2 \\ z = 2 \end{cases} \quad \text{is} \quad \left[\begin{array}{ccc|c} 2 & 1 & 1 & 4 \\ 1 & 1 & 0 & 2 \\ 1 & 0 & 0 & 2 \end{array}\right]$$

(c) TRUE or FALSE The following matrix

$$\left[\begin{array}{cc|c} 1 & 2 & 0 \\ 2 & 4 & 0 \end{array}\right]$$

has the solution $x = 0$ and $y = 0$.

Question 4. 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 $\left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & a \\ 0 & 1 & 0 & 0 & b \\ 0 & 0 & 1 & 0 & c \\ 0 & 0 & 0 & 1 & d \end{array}\right]$.)