Name: **Tutorial day and time:**

Select one *completed* problem for feedback:

1. For each system of equations below, write down the corresponding augmented matrix.

(a)
$$\begin{aligned} 2x - 3y + z &= 2 \\ 2y - 5z &= -3 \\ -3x + 2x &= 7 \end{aligned}$$

(b)
$$\begin{aligned} x_1 + 4x_2 - 7x_4 &= 0 \\ -3x_1 - x_2 + 4x_3 &= 2 \\ 2x_2 - 4x_3 + x_4 &= -5 \end{aligned}$$

2. For each augmented matrix below, write down a corresponding system of equations using whatever variables you prefer.

(a) $\left[\begin{array}{ccc|c} 2 & -1 & 0 & 4 \\ -3 & 4 & 1 & -2 \\ 0 & 2 & 3 & -7 \end{array}\right]$

(b) $\left[\begin{array}{cccc|c} 3 & 2 & 0 & 1 & -5 \\ 0 & 4 & 2 & -7 & 2 \end{array}\right]$

3. State whether or not the given augmented matrix is in reduced row-echelon form, and if not, why.

$\left[\begin{array}{ccc|c} 1 & 0 & 2 & -1 \\ 0 & 1 & 2 & 4 \\ 0 & 0 & 0 & 0 \end{array}\right]$ $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 4 \end{array}\right]$ $\left[\begin{array}{ccc|c} 1 & 2 & 0 & 3 \\ 0 & 1 & 0 & -4 \\ 0 & 0 & 1 & 2 \end{array}\right]$ $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 7 \\ 0 & 2 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{array}\right]$ $\left[\begin{array}{cccc|c} 0 & 1 & 0 & 2 & -3 \\ 0 & 0 & 1 & -3 & 4 \\ 0 & 0 & 0 & 1 & 3 \end{array}\right]$

4. The reduced row-echelon form of a system of equations in the variables x, y, and z is given. State the solution (if any) to the system.

(a) $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 5 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 0 \end{array}\right]$

(b) $\left[\begin{array}{ccc|c} 1 & 0 & -2 & 1 \\ 0 & 1 & 1 & 3 \\ 0 & 0 & 0 & 0 \end{array}\right]$

(c) $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 \end{array}\right]$

5. Solve the following system of equations:

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