Problem 1: Find a parametric representation of the solution set of the linear equation
\[ 5x + 2y = 0. \]

Problem 2: Graph the system of linear equations:
\[ 3x + 2y = 5 \]
\[ 5x - 2y = 2 \]

Use your graph to find the solution to this system of equations.

Problem 3: Use back-substitution to solve the system of equations
\[ 2x + 3y - z = 1 \]
\[ 5y + 2z = 2 \]
\[ 3z = 4 \]

Problem 4: Solve the system of linear equations
\[ 3x - 2y + 4z = 1 \]
\[ x + y - 2z = 7 \]
\[ x - 11y + 4z = 3 \]

Problem 5: Find the value(s) of \( k \) such that the system of equations
\[ x - ky = 0 \]
\[ kx - y = 0 \]
has infinitely many solutions.
**Problem 6**: Suppose \( A = \begin{pmatrix} 1 & 2 & 3 & -1 \\ 0 & 1 & 1 & 2 \\ 0 & 0 & 1 & 3 \end{pmatrix} \) is an augmented matrix representing a system of linear equations in the variables \( x, y \) and \( z \). Find the solution to the system of equations.

**Problem 7**: For the following matrices, determine if they are in row-echelon form, reduced row-echelon form, or neither.

a) \( \begin{pmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ 3 & 1 & 1 & 0 \end{pmatrix} \)

b) \( \begin{pmatrix} 1 & -2 & 5 & 3 \\ 0 & 1 & 5 & 3 \\ 0 & 0 & 1 & 2 \end{pmatrix} \)

c) \( \begin{pmatrix} 1 & 0 & 2 \\ 0 & 1 & -1 \end{pmatrix} \)

**Problem 8**: Find the reduced row echelon form of \( \begin{pmatrix} 1 & 0 & 0 \\ 1 & 1 & 1 \\ 2 & 3 & 7 \\ 5 & 1 & 11 \end{pmatrix} \).

**Problem 9**: Give an example of an inconsistent system of linear equations with fewer equations than variables.

**Problem 10**: Write an augmented matrix which represents the system of linear equations

\[
2x - 7y + 4z + 2w = 3 \\
x + 5y - 2z + 3w = 1 \\
-x + y - 3z + 5w = 1
\]