

Name: _____

Directions: Show all work. No credit for answers without work.

1. [1 point] Complete the following sentence: The number of solutions to a system of linear equations is either

2. [1 point] Give an example of an *inconsistent* system of linear equations in a single variable x .

3. [4 points] Find all solutions to the following system of linear equations. (Use any method you like.)

$$\begin{array}{rcl} 4x + y & = & -2 \\ -2x + y + z & = & 7 \\ 2x + y + z & = & 1 \end{array}$$

4. [4 points] Using *matrices* and *Gauss-Jordan* elimination, find all solutions to the following system of linear equations.

$$\begin{array}{rccccrcr} 3x_1 & - & 9x_2 & + & x_3 & & = & 10 \\ x_1 & - & 3x_2 & & & & = & 1 \\ 2x_1 & - & 6x_2 & - & x_3 & + & x_4 & = & -1 \\ & & & - & 2x_3 & + & x_4 & = & -10 \end{array}$$