

**Instructions.** Show all work, with clear logical steps. No work or hard-to-follow work will lose points.

**Problem 1.** (5 points) Write an augmented matrix for the following system of equations

$$3x - 7y + 18z - w = 4$$

$$7x + 2y - z + 91w = 19$$

$$4x + z - w = 17$$

**Problem 2.** (3 points) What are the three elementary row operations?

**Problem 3.** (2 points) Put the following matrix into row-echelon form.

$$\begin{bmatrix} 1 & 98129 & 2334 \\ 0 & 1 & 19 \\ 0 & 0 & 3 \end{bmatrix}$$