

Show all work clearly and in order. Please box your answers. 10 minutes.

1. Determine if the following system of linear equations is consistent:

$$\begin{array}{cccccccl} x_1 & + & 3x_2 & + & 2x_3 & + & 9x_4 & = & 1 \\ x_1 & + & 2x_2 & - & x_3 & + & x_4 & = & 4 \\ -x_1 & - & 2x_2 & + & x_3 & - & x_4 & = & 2 \end{array}$$

2. Consider the following system of linear equations:

$$\begin{array}{cccccccl} x_1 & + & 2x_2 & + & 5x_3 & = & 3 \\ -x_1 & - & 2x_2 & - & 2x_3 & = & 0 \end{array}$$

- (a) Find the reduced row echelon form (RREF) of the augmented matrix A of the given system.
- (b) What are the pivot columns in A ?
- (c) What is the rank of A ?
- (d) If the system is consistent write the solution in parametric form.