

Name: _____

1. The following matrices are augmented matrices of linear systems which are in REF or RREF. Determine the number of solutions to each system and find all solutions. Write the solutions as vectors. (5 pts each)

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

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

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

2. Let A be an $m \times n$ matrix and $\mathbf{0}$ be the zero m -vector. If \mathbf{v} is a solution to $A\mathbf{x} = \mathbf{0}$, is $5\mathbf{v}$ a solution to $A\mathbf{x} = \mathbf{0}$? Why or why not? (5 pts)