Name:

J#:

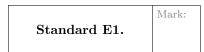
Date:

MASTERY QUIZ DAY 6

Math 237 – Linear Algebra Fall 2017

Version 3

Show all work. Answers without work will not receive credit. You may use a calculator, but you must show all relevant work to receive credit for a standard.



Write a system of linear equations corresponding to the following augmented matrix.

$$\begin{bmatrix} 3 & -1 & 0 & 1 & 5 \\ -1 & 9 & 1 & -7 & 0 \\ 1 & 0 & -1 & 0 & -3 \end{bmatrix}$$

Solution:

$$3x_1 - x_2 + x_4 = 5$$
$$-x_1 + 9x_2 + x_3 - 7x_4 = 0$$
$$x_1 - x_3 = -3$$

Standard E3.

Mark:

Find the solution set for the following system of linear equations.

$$2x_1 - 2x_2 + 6x_3 - x_4 = -1$$
$$3x_1 + 6x_3 + x_4 = 5$$
$$-4x_1 + x_2 - 9x_3 + 2x_4 = -7$$

Solution: Let $A = \begin{bmatrix} 2 & -2 & 6 & -1 & | & -1 \\ 3 & 0 & 6 & 1 & | & 5 \\ -4 & 1 & -9 & 2 & | & -7 \end{bmatrix}$, so RREF $A = \begin{bmatrix} 1 & 0 & 2 & 0 & | & 2 \\ 0 & 1 & -1 & 0 & | & 3 \\ 0 & 0 & 0 & 1 & | & -1 \end{bmatrix}$. It follows that the solution set is given by $\begin{bmatrix} 2 - 2a \\ 3 + a \\ a \\ -1 \end{bmatrix}$ for all real numbers a.

Standard E4.

Mark:

Find the solution set for the following system of linear equations.

$$2x_1 - 2x_2 + 6x_3 - x_4 = 0$$
$$3x_1 + 6x_3 + x_4 = 0$$
$$-4x_1 + x_2 - 9x_3 + 2x_4 = 0$$