Math 251 X01 Assignment Two

Name:_____

Assignments must be completed on this paper. Marks may be deducted for not showing all your work.

1. [6 marks] Find the general form of span($\begin{bmatrix} 1 & 1 \\ 1 & 3 \end{bmatrix}, \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$).

2. [6 marks] Write $A = \begin{bmatrix} 1 & -2 \\ 5 & 8 \end{bmatrix}$ and A^{-1} as a product of elementary matrices.

3. [4 marks] Consider the set S and the statement below. If the statement is true, prove it. If it's false, give a counterexample.

$$S = \{ \begin{bmatrix} x \\ y \\ z \end{bmatrix} \text{ such that } x = 9z \text{ and } y = -7z \}$$

If $\mathbf{u}$ and $\mathbf{v}$ are in S, then $\mathbf{u} + \mathbf{v}$ is in S.

4. [4 marks] Find a basis for span($[1, 3, 2, 3], [2, 6, 5, 7], [-1, -3, 2, 1], [1, 3, 4, 5]$) consisting of some of the original vectors.