MATH 54, FALL 2016, QUIZ 3

(1) Suppose A is a 3×3 matrix such that the set of solutions to $A\mathbf{x} = \mathbf{0}$ is equal to $\text{span}\{\mathbf{a}\}$ and $A\mathbf{b} = \mathbf{c}$. Find all solutions to $A\mathbf{x} = \mathbf{c}$.

$$\mathbf{a} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \mathbf{b} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \mathbf{c} = \begin{bmatrix} -1 \\ 1 \\ 1 \end{bmatrix}$$

(2) For what values of s are the following vectors linearly independent?

$$\begin{bmatrix} 1 \\ 0 \\ 5 \end{bmatrix}, \begin{bmatrix} 2 \\ 3 \\ -1 \end{bmatrix}, \begin{bmatrix} 7 \\ 6 \\ s+1 \end{bmatrix}$$

Date: September 8, 2016.