MATH 54 – QUIZ 2

PEYAM RYAN TABRIZIAN

Name:_____

Instructions: You have 15 minutes to take this quiz, for a total of 10 points. May your luck be linearly independent!

1. *(4 points)* Determine for which c the following vectors are linearly independent:

$$\begin{bmatrix} 3 \\ -6 \\ 1 \end{bmatrix}, \begin{bmatrix} -6 \\ 4 \\ -3 \end{bmatrix}, \begin{bmatrix} 9 \\ c \\ 3 \end{bmatrix}$$

(TURN PAGE)

Date: Thursday, February 5, 2015.

2. *(6 points total)* Suppose $T : \mathbb{R}^3 \longrightarrow \mathbb{R}^2$ is a linear transformation such that:

$$T\begin{bmatrix}1\\0\\0\end{bmatrix} = \begin{bmatrix}2\\4\end{bmatrix} \quad T\begin{bmatrix}0\\1\\0\end{bmatrix} = \begin{bmatrix}3\\6\end{bmatrix} \quad T\begin{bmatrix}2\\-1\\2\end{bmatrix} = \begin{bmatrix}1+4c\\2+2c\end{bmatrix}$$

(a) *(4 points)* Find the matrix of T

(b) *(1 point)* For which c is T one-to-one? Justify **briefly**

(c) *(1 point)* For which c is T onto $\mathbb{R}^2$? Justify **briefly**