MATH 54 – QUIZ 7

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Name:__________________________

Instructions: You have 20 minutes to take this quiz, for a total of 10 points. May your luck be infinite-dimensional!

1. (5 points) Consider the following subspace $W$ of $\mathbb{R}^3$, given by all vectors of the following form, where $a, b, c, d$ are real numbers.

$$
\begin{bmatrix}
a - 3b - 2c - 3d \\
-2a + 6b + 3c + 5d \\
5c + 5d
\end{bmatrix}
$$

(a) (3 points) Find a basis for $W$

(Hint: Can you write $W$ as $\text{Col}(A)$ for some matrix $A$?)

(b) (2 points) Find $\dim(W)$

(TURN PAGE)

Date: Friday, October 10, 2014.
2. (5 points) If $A$ is a $5 \times 8$ matrix, what is the largest possible dimension of $\text{Row}(A)$? What is the smallest possible dimension of $\text{Nul}(A)$? Justify your answer.