

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 $Col(A)$ for some matrix A ?)
- (b) (2 points) Find $dim(W)$

(TURN PAGE)

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2. (5 points) If A is a 5×8 matrix, what is the **largest** possible dimension of $Row(A)$? What is the **smallest** possible dimension of $Nul(A)$? Justify your answer.