

Quiz 4

Math 54-Lec 3, Linear Algebra, Fall 2017

SECTION:

NAME:

You have 30 minutes to complete this quiz. To receive full credit, you must justify your answers.

Problem 1.(5 Points) Let $W \subseteq \mathbb{R}^n$ be the subset of \mathbb{R}^n containing all vectors whose entries sum to zero. Verify that W is a *subspace* of \mathbb{R}^n .

Problem 2.(5 points) Determine whether the following set of vectors is a basis for \mathbb{P}_2 , the vector space of polynomials of degree ≤ 2 .

$$\{1 + 2x - x^2, 1 + x^2, 2 + x + x^2\}$$

Quiz 2

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Problem 3.(1 point each.) Label the following statements true or false. You do not need to justify your answers.

- (a.) _____ If $H = \text{Span}\{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n\}$, then $\{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n\}$ is a basis for H .
- (b.) _____ If A is an invertible $n \times n$ matrix, then the columns of A form a basis of \mathbb{R}^n .
- (c.) _____ \mathbb{R}^2 is a subspace of \mathbb{R}^3 .
- (d.) _____ If B is a row-echelon form of a matrix A , then the columns of B form a basis for $\text{Col}A$, the column space of A .
- (e.) _____ If $A = A^T$, then the rows of A form a basis for $\text{Col}A$, the column space of A .