

MATH 307

Individual Homework 4

Instructions: Due the beginning of the next class (no late homework is accepted). Read textbook pages 27 and 29 before working on the homework problems. Show all steps to get full credits.

1. Textbook page 40, problem 1.
2. Textbook page 40, problem 5.
3. Let F be a field such as \mathbb{R} or \mathbb{C} and $F^{n \times n}$ be the set of all $n \times n$ matrices with entries chosen from F . Let $A \in F^{n \times n}$, the trace of A , denoted by $tr(A)$ is defined as the sum of all of its diagonal entries, i.e., $tr(A) = \sum_{i=1}^n a_{ii}$. We know that $F^{n \times n}$ is a vector space over F . Prove that $\{A \in F^{n \times n} | tr(A) = 0\}$ is a subspace of $F^{n \times n}$.