

October 20, 2010

Math 510 Ungraded Homework 9.2

1. Prove if $A \in \mathbb{C}^{n \times n}$, then

$$\operatorname{tr}(A^*A) = \sum_{i=1}^n \sum_{j=1}^n |a_{ij}|^2.$$

2. Prove if $A, B \in \mathbb{C}^{n \times n}$, then

$$\operatorname{tr}(AB) = \operatorname{tr}(BA).$$

Give an example of matrices $A, B, C \in \mathbb{C}^{n \times n}$, then

$$\operatorname{tr}(ABC) \neq \operatorname{tr}(BAC).$$