

QUESTION 1 (Based on Golan Chapter 2 : Fields, p5)

Let $K = \mathbb{R}\{I_2, A\}$ be the subspace of $\mathcal{M}_{2 \times 2}(\mathbb{R})$ generated by I_2 and $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$. Show that K is a field under ordinary matrix addition and multiplication.

QUESTION 2 (Based on Golan Chapter 2 : Fields, p5)

Show that K in Question 1 and \mathbb{C} are isomorphic as fields.