Homework 4: Linear transformations; matrices. Part 1.
Due Thursday February 7.

1. Let V and W be vector spaces over a field F. Let $A : V \to W$ be a linear transformation that has an inverse function $B : W \to V$. Prove that B has to be a linear transformation.

2. Problem 4.1 from Jänisch

3. Think of $\mathbb{C}$ as a 2-dimensional vector space V over $\mathbb{R}$, and let $A : V \to V$ be the linear transformation of V given by the multiplication by $1 + 2i$ in $\mathbb{C}$. Write the matrix of A with respect to the standard basis of V.

4. Problems (2) and (4) from 5.4 "Test" on p. 93 of Jänisch.