

In JREA: 4.8 } Operations with Linear Transformations!

An Overview of Lecture 13-14

1. Sum $T^a + T^b$

2. Composition of $T: U \rightarrow V$ and $S: V \rightarrow W$

$$T \circ S: U \rightarrow W$$

3. Invertibility: $\exists T'$ s.t. $T' \circ T = I_U$
 $T \circ T' = I_V$

$$T'' = T' = T^{-1}$$

4. Uniqueness of T' : $T'' \circ T = I_U$
 $T \circ T'' = I_V$

5a) $\exists T^{-1}$ s.t. $T^{-1} \circ T = I_U$
 $T \circ T^{-1} = I_V$

$\left\{ \begin{array}{l} T \text{ is onto} \\ T \text{ is 1-1} \end{array} \right.$

plus T is linear $\} \Rightarrow T^{-1}$ is linear

5b) $\exists T^{-1}$ s.t. $T^{-1} \circ T = I_U$
 $T \circ T^{-1} = I_V \iff \left\{ \begin{array}{l} T \text{ is onto} \\ T \text{ is 1-1} \end{array} \right.$