1 | eigenspace, $E(\lambda, T)$

def

Suppose $T \in \mathcal{L}(V)$ and $\lambda \in \mathbb{F}$. The eigenspace of T corresponding to λ denoted $E(\lambda,T)$, is defined by

$$E(\lambda, T) = (T - \lambda I)$$

In other words, $E(\lambda,T)$ is the set of all eigenvectors of T corresponding to λ , along with the 0 vector.

1.1 | results

1.1.1 $|\lambda|$ is an eigenvalue of T iff $E(\lambda, T) \neq \{0\}$

1.1.2 | Axler5.38 sum of eigenspaces is a direct sum

Because Axler5.10 linearly independent eigenvectors

Also, the dimension of the sum of eigenspaces will be less-equal than the dimension of the containing space (duh)

Taproot • 2021-2022 Page 1