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

$$E(\lambda, T) = \text{null}(T - \lambda I)$$

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 | λ 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)