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Math 201 - Lecture Participation Assignment Week 12

Theorems

1) If $\lambda_1 \neq \lambda_2$ are the eigenvalues of T, then $E_T(\lambda_1) \cap E_T(\lambda_2) = \{0\}$ zero vector of T

2) $T: V \to V$ be linear. Let $\lambda_1, \lambda_2, \dots, \lambda_k$ be distinct eigenvalues of T.

If $v_1, v_2, \dots, v_k$ are the eigenvectors of T such that $T(v_i) = \lambda_i v_i$ for $i=1, \dots, k$.

Then $\{v_1, v_2, \dots, v_k\}$ is a linearly independent subset of V.

3) Let $T: V \to V$ be linear with $\dim V = n < \infty$. If T has n distinct eigenvalues, then T is diagonalizable.

4) $T: V \to V$ be linear with $\dim V = n < \infty$.

T is diagonalizable $\leftrightarrow$ (i) $P_T(\lambda)$ has n roots (counted with multiplicities)

(ii) $AM(\lambda) = GM(\lambda)$ for each eigenvalue of T.

$\leftrightarrow$ There exists an eigenbasis B of V.