

Math 217: Quiz 11
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1. Define **eigenvector** of a linear transformation $T : V \rightarrow V$.

2. Let $A = \begin{bmatrix} 2 & 7 \\ -1 & -6 \end{bmatrix}$.
 1. Show that $\vec{v}_1 = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$ and $\vec{v}_2 = \begin{bmatrix} 7 \\ -1 \end{bmatrix}$ are eigenvectors of A .
 2. What are the corresponding eigenvalues?
 3. Find an **eigenbasis** \mathcal{B} for A .
 4. Find $[A]_{\mathcal{B}}$.
 5. Find a matrix S such that $[A]_{\mathcal{B}} = S^{-1}AS$.
 6. Find an expression for A^{200} in terms of S and S^{-1} .