

Math 300

Section 5.3 Diagonalization

If A and B are $n \times n$ matrices, then A is similar to B if there is an invertible matrix P such that $P^{-1}AP = B$.

An $n \times n$ matrix A is diagonalizable if it is similar to a diagonal matrix.

Theorem An $n \times n$ matrix A is diagonalizable if and only if A has n linearly independent eigenvectors; that is, if a set of eigenvectors of A form a basis for \mathbb{R}^n . If A is diagonalizable, then $A = PDP^{-1}$ where the diagonal entries of D are the eigenvalues of A and the columns of P are the corresponding eigenvectors.