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Theorem: If T is a linear operator on V such that $\Delta_T(t)$ splits into linear factors over K, then there is a basis S for V such that $[T]_S$ is in Jordan Canonical Form.
Moreover, the Jordan Form is uniquely determined by T, up to the order of the blocks.

Corollary If A is a square matrix such that $\Delta_A(t)$ splits into linear factors over K, then A is similar to a matrix in Jordan Canonical Form.
Moreover, two matrices are similar if and only if they have the <u>same</u> Jordan Form, up to the order of the blocks.

End Lec 36

Lec 37 4/29/09

<u>Remarks</u>: The theorem and Corollary state that the Jordan Form of T or A is uniquely determined up to the order of the blocks. Two matrices <u>in</u> Jordan Form are similar (and are considered to be the <u>same</u> Jordan Form) if and only if:

- they have the same eigenvalues (diagonal entries)
- For <u>each</u> eigenvalue λ
  - the number of λ's on the diagonal (i.e. the algebraic multiplicity) is the same
  - the total number of Jordan blocks for λ is the same
  - the number of Jordan blocks for λ of each <u>size</u> is the same.