Lec 9/12

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bases $\{v_1, \dots, v_n\}$ $\{w_1, \dots, w_n\}$

$T \rightsquigarrow A$ $T \rightsquigarrow B$

$= [T(v_1), \dots, T(v_n)]$ $= [T(w_1), \dots, T(w_n)]$

$= (\alpha_{ij})$ $= (\beta_{ij})$

$w_i = \sum_{j=1}^{n} \sigma_{ji} v_j$ (σ_{ji}) = transition matrix S.

$$T(w_i) = \sum_{j=1}^{n} \sigma_{ji} T(v_j) = \sum_{j=1}^{n} \sigma_{ji} \left(\sum_{k=1}^{n} \alpha_{kj} v_k \right)$$

$$= \sum_{k=1}^{n} \left(\sum_{j=1}^{n} \alpha_{kj} \sigma_{ji} \right) v_k$$

$$\sum_{l=1}^{n} \beta_{li} w_l$$

$$= \sum_{l=1}^{n} \beta_{li} \left(\sum_{k=1}^{n} \sigma_{kl} v_k \right) = \sum_{k=1}^{n} \left(\sum_{l=1}^{n} \sigma_{kl} \beta_{li} \right) v_k$$

Meaning $SB = AS$

S invertible $\Rightarrow$ $B = S^{-1} A S$

B, A conjugated by S.