

Math 390 Monday February 8

FQA CP(ME?) - Characteristic Polynomial
- Multiplicity of Eigenvalues

IS work sheet

convert:

right-kernel (basis = "pivot")

$$A \begin{bmatrix} \underline{x}_1 & \underline{x}_2 & \dots & \underline{x}_n \end{bmatrix} = \begin{bmatrix} \underline{x}_1 & \underline{x}_2 & \dots & \underline{x}_n \end{bmatrix} \begin{bmatrix} x & x & x & \dots & x \\ x & x & x & \dots & x \\ \vdots & \vdots & \vdots & \dots & \vdots \\ 0 & \dots & \dots & \dots & x \end{bmatrix}$$

$$A \underline{x}_1 = ? \underline{x}_1 \quad \langle \underline{x}_1 \rangle \text{ A-invariant}$$

$$A \underline{x}_2 = ? \underline{x}_1 + ? \underline{x}_2 \quad \langle \underline{x}_1, \underline{x}_2 \rangle \text{ A-invariant}$$

$$A \underline{x}_3 = ? \underline{x}_1 + ? \underline{x}_2 + ? \underline{x}_3 \quad \langle \underline{x}_1, \underline{x}_2, \underline{x}_3 \rangle \text{ A-invariant}$$

There is a sequence of nested A-invariant subspaces

Tue- Problem session

#11 via email by Noon tomorrow

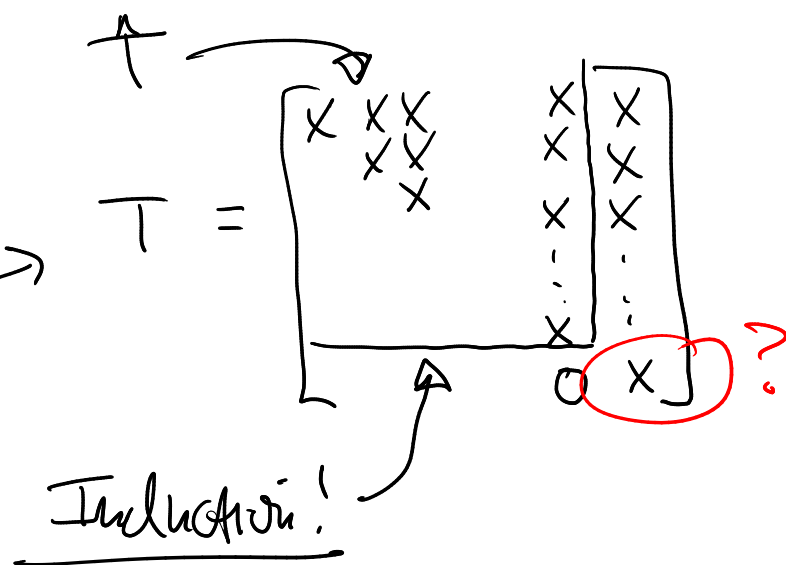
Thu- Matrices / LT upgrade

Fri - BYOB ART

$$U = \langle \{ \underline{x}_1, \underline{x}_2, \dots, \underline{x}_{n-1} \} \rangle$$

$$AS = ST$$

$$\underset{n \times n}{A} [\underset{n \times n-1}{\underline{x}_1 | \dots | \underline{x}_{n-1}}] = [\underset{n \times n-1}{\underline{x}_1 | \dots | \underline{x}_{n-1}}] \underset{n-1 \times n-1}{\hat{T}}$$



$$A \hat{S} = \hat{S} \hat{T} \rightarrow A^n \hat{S} = \hat{S} (\hat{T})^n \quad (\overline{u} \hat{T} = \hat{u})$$

$$\text{Claim: } \dim(U \cap N(A^n)) = \dim(N(\hat{T}^n))$$

↑ dim = n-1

$$\text{topping out} \Rightarrow \dim(N(\hat{T}^{n-1})) = \dim(N(\hat{T}^n))$$

↑ \hat{T} $(n-1) \times (n-1)$ matrix

$T - \lambda I$ has 0 as eigenvalue if λ eigenvalue