Math 290A, Monday, April 6, Problem session, Chapter VS

Tue - Section PDM
Sage

Wed - Exam VS

Thu - Section EE, RQ

Bases for $C(A)$ (A matrix)

1) B RREF of A, identify pivot columns, use "same" columns of A as a basis
Theorem BCS

2) Form A^t then $C(A) = R(A^t)$, RREF of A^t, "keep" non zero rows
Theorem CSRST Theorem BRS

3) Extended echelon form of A, $C(A) = N(L)$ ← Theorem FNS

V - vector space define a subspace $W = \langle \emptyset \rangle = \langle \{0\} \rangle$

① $\dim(W) = 0$

② $W = \{0\}$

0 empty linear combination

$$\prod_{i=1}^{3} (i^2+2) = 3 \cdot 6 \cdot 11$$

Empty product = 1

multiplicative identity

A $n \times n$, $r(A) = n$, "full rank"

$\Rightarrow n(A) = 0 \Rightarrow \dim(N(A)) = 0$

$\Rightarrow N(A) = \{0\}$

$$\sum_{i=1}^{10} i^2 = 1+4+9+\cdots+100$$

$$\sum_{i=1}^{10} i^2 = \sum_{i=1}^{3} i^2 + \sum_{i=4}^{10} i^2$$

$$= \sum_{i=1}^{K} i^2 + \sum_{i=K+1}^{10} i^2$$

$$= \sum_{i=1}^{10} i^2 + \sum_{i=11}^{10} i^2$$

Empty sum, no terms

must be zero

Empty sum is additive identity

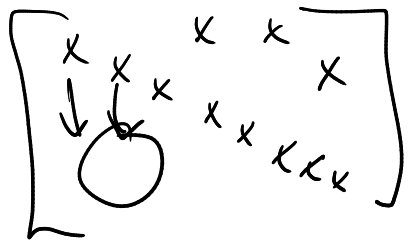
A, construct B by multiplying a row (column) by α.

$\Rightarrow \quad \det(B) = \alpha \det(A)$

Want $\det(A)$

$$\det(A) = \frac{1}{\alpha} \det(B)$$

$$A \xrightarrow{\text{row op}} A_1 \xrightarrow{\text{row op}} A_2 \rightarrow \cdots \xrightarrow{\text{row op}}$$



$$\uparrow$$

$$\det(A)$$