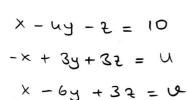
1/ abcdefghijk 20200808019

1 brahim Duman 20200808019



$$\begin{bmatrix} 1 & -4 & -1 & | & 10 \\ -1 & 3 & 3 & | & 4 \\ 1 & -6 & 3 & | & 4 \end{bmatrix} \xrightarrow{S_1 + S_2} \begin{bmatrix} 1 & -4 & -1 & | & 10 \\ 0 & -1 & 2 & | & 10 + 4 \\ 0 & -2 & 4 & | & 9 - 10 \end{bmatrix}$$

first of all to system has infinitely may solution -

$$3a + b + luc + 39d = 50$$

 $a + ub + 6c + 2d = 15$
 $2a + 9b + c + d = 12.5$

ibrahim DUMAN 20200608019

Martin

$$\begin{bmatrix} 1 & 1 & 6 & 2 & 15 \\ 3 & 1 & 11 & 39 & 50 \\ 2 & 9 & 1 & 1 & 12.5 \end{bmatrix} \xrightarrow{281482} \begin{bmatrix} 1 & 1 & 6 & 2 & 15 \\ 0 & -11 & -1 & 33 & 5 \\ 0 & 1 & -1 & -3 & -175 \end{bmatrix}$$

d is a free variable (There is infinitely many solution, let's take d=1)

$$-125 C = -187.5$$
 $C = 1.5$

$$b - 11c - 3d = -17.5$$

 $b = -17.5 + 16.5 + 1$

$$a + 4b + 6c + 2d = 15$$

 $a = 15 - 0 - 9 - 2$

$$\begin{array}{ccc}
\text{mix A} & \rightarrow 49 \\
\text{mix B} & \rightarrow & 0 \\
\text{mix c} & \rightarrow & 1.59 \\
\text{mix D} & \rightarrow & 49
\end{array}$$

#

ibrahim DUMAN 2000808019 By the Croner's rule; $X = \begin{bmatrix} 11 & 1 & 1 & 1 \\ 11 & 1 & 1 & 1 \\ 0 & 1 & 1+12 & 1 \\ 0 & 1 & 1 & 1-12 \end{bmatrix}$ $\begin{bmatrix}
11 & 1 & 1 & 1 \\
11 & 1-4 & 1 & 1 \\
0 & 1 & 1+4 & 1
\end{bmatrix}$ $\begin{bmatrix}
41 & 1 & 1 & 1 \\
0 & -4 & 0 & 0 \\
0 & 1 & 1+4 & 1
\end{bmatrix}$ $= 11.(-1)^{2} \begin{bmatrix} -4 & 0 & 0 \\
1 & 1+4 & 1 \\
0 & 1 & 1-4 & 1
\end{bmatrix}$ = 4402 -4 0 0 0 1 1+10 1 -4(1-02)(-(-4)= -24/+402 +4 =402 1 1+0-1

 $= (-1)^{5} \cdot - u^{2} u^{2}$ $= u^{2} u^{3}$

ibrahim Duman 20200808019

Span { v, , v2 , v3 ... , vp }

Span { v, , v2 , v3 , ... , vp , u }

America

If u is a linear combination of $V_1, V_2, V_3, ..., V_p$. $U = C_1V_1 + C_2V_2 + C_3V_3 + ... + C_pV_p$

it will be redundant vector for spon.

And spois dimension will be P.

But in this question; u is not a linear combination of u, uz, uz, uz, ..., up so it is not redundant.

I near it needs to be in the span.

let $\dim \left(\operatorname{Spon} \left\{ V_1, V_2, \dots, V_p \right\} \right) = x$ (becouse we don't know they are redundant or not.)

So $\dim \left(\operatorname{Spon} \left\{ V_1, V_2, \dots, V_p, V_s \right\} \right)$ will be = x + 1

We know that x < x +1

So, I prove that

dim (spon { Uz, Uz, ... Up}) < dim (spon { U, Uz, ... Up, U})

Ibrahim Duman 2000808019

$$2x + 2y + 8z = 1$$

 $5x + 3y + 10z = 2$
 $ax + by + cz = k$

to unique

$$\begin{vmatrix} 2 & 2 & 8 \\ 5 & 3 & 10 \end{vmatrix}$$
 det = 6c + 40b + 20a - 2u

 $\begin{vmatrix} a & b & c \\ 2 & 2 & 8 \\ 5 & 3 & 10 \end{vmatrix}$ divide (4

 $\begin{vmatrix} by - y \\ 4 & 5b + c \end{vmatrix}$

let's check:

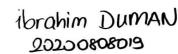
$$2 \times +2y + 82 = 1$$

 $5 \times +3y + 10 + = 2$
 $\times +5b + 2 = 3$

$$\begin{bmatrix} 2 & 2 & 8 & | & 1 \\ 5 & 3 & 10 & | & 2 \\ 1 & 5 & 1 & | & 3 \end{bmatrix} \xrightarrow{-\frac{5}{2}R_{1}tR_{2}} \begin{bmatrix} 2 & 2 & 8 & | & 1 \\ 0 & -1 & -10 & | & -1/2 \\ 0 & 4 & -3 & | & 5/2 \end{bmatrix} \xrightarrow{2R_{1}tR_{3}} \begin{bmatrix} 2 & 2 & 8 & | & 1 \\ 0 & -2 & +(0) & -1/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0 & 0 & -23 & | & 3/2 \\ 0$$

1+ hos unique solution.

$$D = \begin{bmatrix} 2 & 0 & 4 \\ 1 & -1 & -8 \\ 4 & 3 & 32 \end{bmatrix}$$



Column Space =
$$\left\{ \begin{pmatrix} 2\\1\\1 \end{pmatrix}, \begin{pmatrix} 0\\-1\\3 \end{pmatrix} \right\}$$

$$2(j+1) = 2(2) = 4$$
 and $\frac{1}{2}$ $\frac{1}{2}$

$$C_{1}\begin{pmatrix} 2\\ 1\\ 1 \end{pmatrix} + C_{2}\begin{pmatrix} 0\\ -1\\ 3 \end{pmatrix} = \begin{pmatrix} u\\ 1\\ \star \end{pmatrix}$$

$$C_1 - C_2 = 1$$
 $C_2 = 2 - 1 = 1$