

$$\begin{array}{c}
 \left(\begin{array}{ccc|cc}
 1 & 0 & 0 & 2M & 2N \\
 0 & 1 & 0 & M & N \\
 0 & 0 & 1 & F & 2 \\
 \hline
 & & & 1 & 2 \\
 & & & 0 & 2 \\
 & & & 2 & 5 \\
 & & & 1 & 2
 \end{array} \right) \\
 \begin{array}{ccccc}
 x_1 & x_2 & x_3 & D & 2
 \end{array}
 \end{array}$$

$$\begin{array}{l}
 x_1 = 5 - 2M - 2N \\
 x_2 = 2 - M - N \\
 x_3 = 2 + F + 0 + 2N
 \end{array}$$

$$\left(\begin{array}{cccc|c} 2 & 3 & 0 & -1 & 1 \\ 3 & 2 & 4 & -2 & 0 \\ 1 & 1 & 4 & 1 & 2 \end{array} \right) \sim$$

$$\left(\begin{array}{cccc|c} 1 & -1 & 4 & -1 & 2 \\ 3 & 2 & 4 & -2 & 0 \\ 2 & 3 & 0 & -1 & 1 \end{array} \right) \begin{array}{l} | -3 | -2 \\ 2 \end{array}$$

$$\left(\begin{array}{cccc|c} 1 & -1 & 4 & -1 & 2 \\ 0 & 5 & -8 & 1 & -8 \\ 0 & 5 & -8 & 1 & -3 \\ 0 & 0 & 0 & 0 & 3 \end{array} \right)$$

$$Ax = 0 \quad m < n$$

ma m řad n sloupců

\exists $j \in \{1, \dots, n\}$ $D_j(A)$ neobaluje

řadenci n řad

$$A' x' = -D_j(A)$$

$$A \leftarrow RST$$

$$x' = -D_j(A)$$

$$J = \{j_1 < j_2 < \dots < j_k\} \quad \text{index}$$

$$J' = \{l_1 < l_2 < \dots < l_n\} \quad \text{ma}$$

$$x_{l_i} = 0 \quad l_i \neq j \quad x_j = 1$$

$$A x = b \quad m < n$$

$$\exists x_0 \quad (A x_0 = b) \Rightarrow$$

$$\exists x_1 \neq x_0 \quad A x_1 = b$$

$$\text{dle a)} \quad \exists \alpha \neq 0 \quad A \alpha = 0$$

$$A x_0 = b$$

$$A(x_0 + \alpha) = b$$

$$\sim$$
$$x_1$$

$$(i) \Rightarrow (iii) \quad S \neq \emptyset$$

$$x, y \in S, \alpha, \beta \in \mathbb{K} \Rightarrow \alpha x + \beta y \in S$$

$$\alpha x \in S, \beta y \in S$$

$$\alpha x + \beta y \in S$$

$$\underline{(iii) \Rightarrow (ii)} \quad \underline{M = \emptyset} \quad \underline{\emptyset \in S}$$

$$n \Rightarrow n+1$$

$$x_1, \dots, x_n \in S, \alpha_1, \dots, \alpha_n \in \mathbb{K}$$

$$\left(\alpha_1 x_1 + \dots + \alpha_n x_n \right) + \alpha_{n+1} x_{n+1} \in S$$

(iii) \Rightarrow (i)

$$\sum_{i=1}^n x_i = 0 \Rightarrow S$$

$$x, y \in S$$

$$x + y = \lambda \cdot x + \lambda \cdot y \Rightarrow S$$

$$S \neq \emptyset$$