$$\begin{pmatrix} 1 & 2 & 1 \\ 3 & 4 & 2 \end{pmatrix} + \begin{pmatrix} -1 & -2 & -1 \\ -3 & -4 & -2 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$$

$$2\begin{pmatrix} 1 & 2 & 1 \\ 3 & 4 & 2 \end{pmatrix} = \begin{pmatrix} 2 & 4 & 2 \\ 6 & 8 & 4 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 & 1 \end{pmatrix}\begin{pmatrix} 3 \\ 4 \\ 2 \end{pmatrix} = 3 + 8 + 2 =$$

$$= 13$$

$$\begin{pmatrix} 2 & 3 & 4 \\ 1 & 2 & 3 \end{pmatrix} \begin{pmatrix} 3 \\ 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 17 \\ 11 \end{pmatrix}$$

$$2 \times \cancel{3} \qquad \cancel{3} \times 1 \qquad 2 \times 1$$

$$A \cdot (B \cdot C) = (A \cdot B) C$$

$$A \cdot B \neq BA$$

$$r_i(A\alpha) = r_i(A)\cdot\alpha$$

$$\overset{m\,n}{A}\cdot\overset{n\,r}{\alpha} = \left(r_i(A)\,c_k(\alpha)\right)_{\substack{1\le i\le m\\ 1\le k\le n}}$$

$$r_i(A\alpha) = \left(r_i(A)\,c_k(A)\right)_{1\le k\le n}$$

$$\parallel$$

$$r_i(A)\cdot\alpha$$

$$a_1 x_1 + \dots + a_n x_n = \sum_{i=1}^{n} a_i x_i$$

$$\begin{pmatrix} \cancel{0} & 1 & \cancel{2} \\ \cancel{0} & \cancel{0} & 2 \\ \cancel{0} & \cancel{0} & \cancel{0} \end{pmatrix} \qquad \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{pmatrix}$$

$$Bx = c$$

$$\begin{pmatrix} & b & & 0 \\ 0 & 1 & \cdots & \\ 0 & 0 & & 1 \\ & & & b \end{pmatrix} x = c$$

$$x_2$$

$m \times n$ $\qquad$ $m + n$

$m, n \geq 1$

② $\qquad$ (a)

$\dfrac{a = 0}{a \neq 0}$ $\qquad$ 3

(1)

$m + n > k$

$$A = \left(0 \;\middle|\; \overset{m \times (n-1)}{B} \right) \sim \left(0 \;\middle|\; C \right)$$

$m + n - 1 < m + n$

$\underline{\underline{RS}}$

$$A \begin{pmatrix} & & \\ \neq 0 & & \\ & & \end{pmatrix} \sim \begin{pmatrix} \neq 0 & & \\ & & \\ & & \end{pmatrix}$$

$$\sim \left(\begin{array}{c|c} \neq 0 & B \\ \hline 0 & B \end{array}\right) \sim \left(\begin{array}{c|c} A & B' \\ \hline 0 & C \end{array}\right)$$

RF

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

$$\sim \left(\begin{array}{cccc|c} 1 & -1 & 4 & -1 & 2 \\ 0 & 5 & -8 & 1 & -6 \\ 0 & 5 & -8 & 1 & -3 \end{array}\right)$$

$$\sim \left(\begin{array}{cccc|c} 1 & -1 & 4 & -1 & 2 \\ 0 & 5 & -8 & 1 & -6 \\ 0 & 0 & 0 & 0 & 3 \end{array}\right)$$

nemá řeš

(A | B) $m < n$

(B | C)   RST

r(B) je največji m red. pod.

∃ [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

X j' [illegible] [illegible]. $\neq 0$

$$A x_0 = 0 \quad , \quad x_0 \neq 0$$

$$A x = b$$

$$A(x + x_0) = b + 0 = b$$

$$x + x_0 \neq x$$

$$(I) \Longrightarrow (II) \qquad x, y \in S \ ? \implies ax + by \in S$$

$$a, b \in K$$

$$\frac{\begin{array}{c} ax \in S \\ by \in S \end{array}}{ax + by \in S} \qquad S \neq \emptyset$$

$(iii) \Rightarrow (iii)$

$n = 0$ $\qquad \sum_{i=1}^{0} a_i x_i = 0 \in S$

$\exists x \in S$

$1 \cdot x + (-1) x = 0 \in S$

$\in S \qquad \in S$

$n \Rightarrow n+1$

$$x_1, \ldots, x_n, x_{n+1} \in S \qquad \overset{?}{\in} S$$

$$\Downarrow$$

$$\underbrace{\underbrace{1\cdot(a_1 x_1 + \cdots + a_n x_n)}_{\in S} + \underbrace{a_{n+1} x_{n+1}}_{\in S}}_{\in S}$$

(iii) $\Rightarrow$ (i)

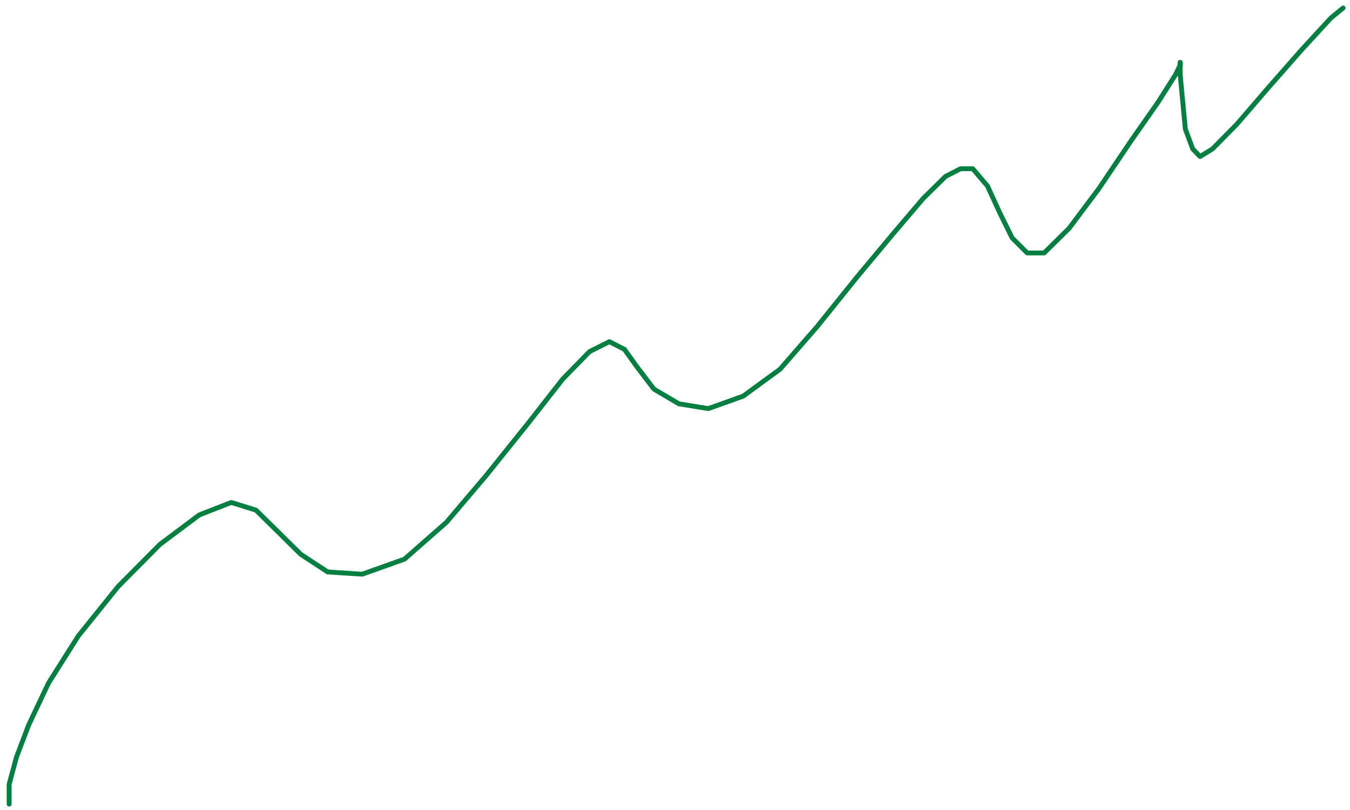
$S \neq \emptyset$ $\qquad x, y \in S \Rightarrow x+y \in S$

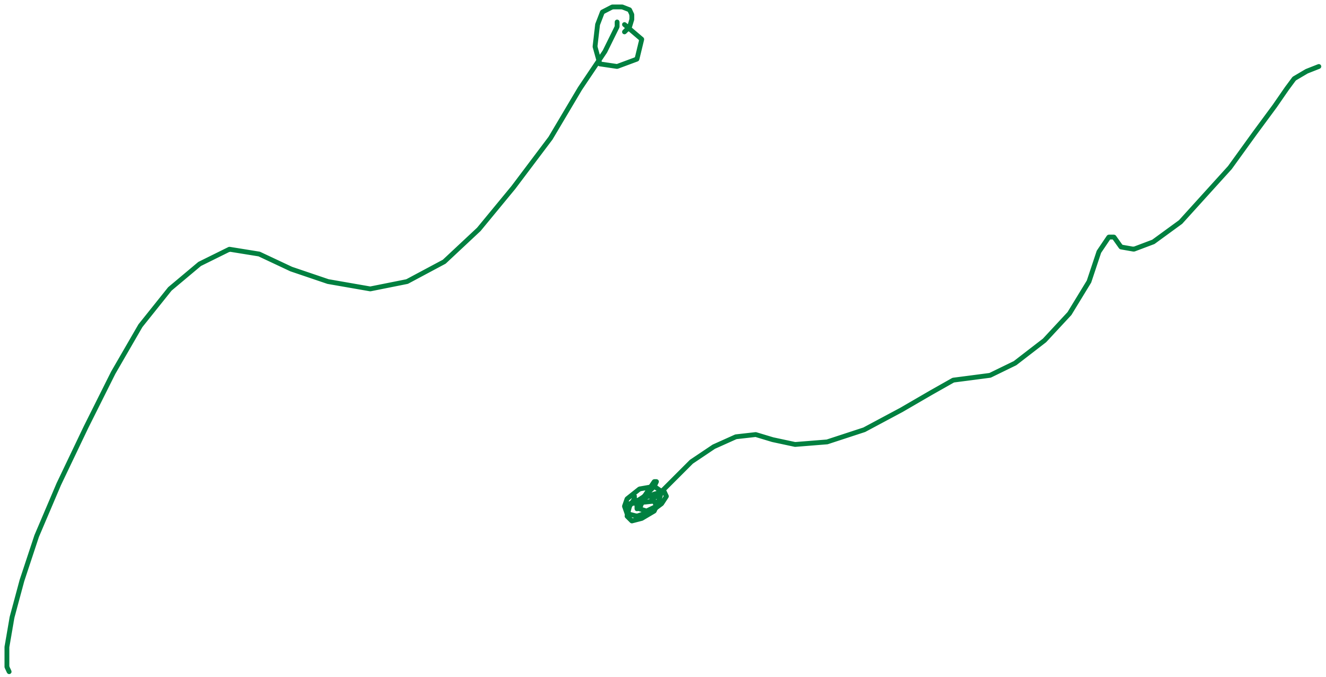
$a \in K \Rightarrow ax \in S$

$$\sum_{i=1}^{0} a_i x_i = 0 \in S$$

$1 \cdot x + 1 \cdot y \in S$

$ax \in S$





$$x_1, x_2, \cdots x_n$$

$$a_1 x_1 + a_2 x_2 \qquad + a_n x_n$$