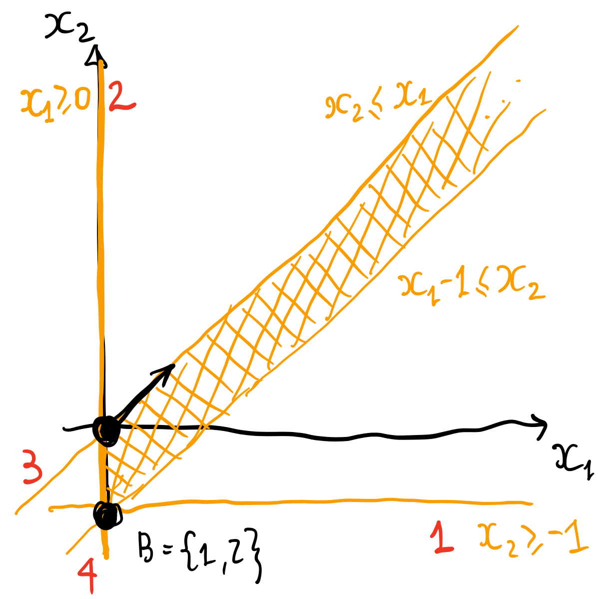
$$\max \; x_1 + x_2$$
$$x_2 \geq -1$$
$$x_1 \geq 0$$
$$x_2 \leq x_1$$
$$x_1 - 1 \leq x_2$$

$$A = \begin{array}{cc} \begin{bmatrix} 0 & -1 \\ -1 & 0 \\ -1 & 1 \\ 1 & -1 \end{bmatrix} & \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \end{array} \end{array} \qquad b = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

$$c = \begin{bmatrix} 1 & 1 \end{bmatrix}$$



(I) $B = \{1,2\}$ $\quad A_B = \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} = A_B^{-1}$ $\quad \bar{x} = A_B^{-1} b_B = \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ -1 \end{bmatrix}$

$$\bar{y}_B = c A_B^{-1} = \begin{bmatrix} 1 & 1 \end{bmatrix} \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} = \begin{bmatrix} -1, & -1 \end{bmatrix}$$

$$\bar{y}_N = 0 \qquad \bar{y} = \begin{bmatrix} \boxed{-1} & -1 & 0 & 0 \end{bmatrix}$$

$h = 1$

ξ LO COSTRUISCO PRENDENDO LA COLONNA DI INDICE h IN $-A_B^{-1} = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

ξ

$$A_N \xi = \begin{bmatrix} -1 & 1 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$

$$b_N - A_N \bar{x} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} - \begin{bmatrix} -1 & 1 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} 0 \\ -1 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} - \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

$k = 3$

$$\arg\min \left\{ \frac{b_i - A_i \bar{x}}{A_i \xi} \;\middle|\; A_i \xi > 0 \wedge i \in N \right\}$$

(II) $B = \{1,2\} - \{1\} \cup \{3\} = \{2,3\}$

2 3

$\downarrow \; \downarrow$

$$A_B = \begin{bmatrix} -1 & 0 \\ -1 & 1 \end{bmatrix} \qquad A_B^{-1} = \begin{bmatrix} -1 & 0 \\ -1 & 1 \end{bmatrix} \qquad \bar{x} = \begin{bmatrix} -1 & 0 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\bar{y}_B = \begin{bmatrix} 1 & 1 \end{bmatrix} \begin{bmatrix} -1 & 0 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} -2 & 1 \end{bmatrix} \qquad \bar{y} = \begin{bmatrix} 0 & \underset{\textstyle h=2}{\underset{\uparrow}{-2}} & 1 & 0 \end{bmatrix}$$

$$\xi = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$A_N \xi = \begin{bmatrix} 0 & -1 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix} = \begin{bmatrix} -1 \\ 0 \end{bmatrix} \leq 0 \implies$$ IL PROBLEMA È ILLIMITATO.