

$$B = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix} \quad L = \begin{bmatrix} l_1 & l_2 \end{bmatrix} \quad (1)$$

and

$$BL = \begin{bmatrix} b_1 l_1 & b_1 l_2 \\ b_2 l_1 & b_2 l_2 \end{bmatrix} \quad (2)$$

$$\begin{bmatrix} b_1 l_1 & b_1 l_2 \\ b_2 l_1 & b_2 l_2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = 0 \quad (3)$$

hence

$$v = \begin{bmatrix} -l_2 \\ l_1 \end{bmatrix}, v = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix} \quad (4)$$

One vector is in null-space the other one is the column vector itself.