

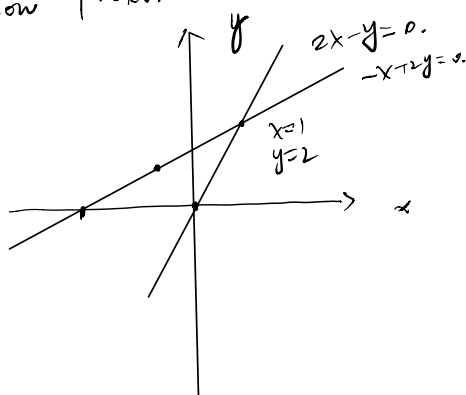
$$2x - y = 0$$

$$-x + 2y = 3$$

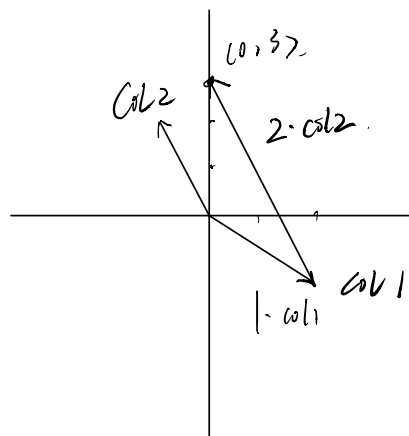
$$\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 0 \\ 3 \end{bmatrix}$$

A x b

Row Picture.



Column Picture.



$$x \begin{bmatrix} 2 \\ -1 \end{bmatrix} + y \begin{bmatrix} -1 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 3 \end{bmatrix}$$

linear combination of columns

$$2x - y = 0$$

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

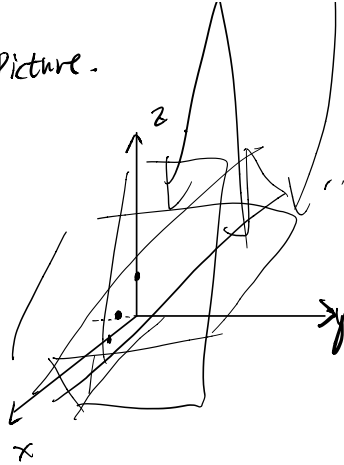
$$-3y + 4z = 4$$

$$A = \begin{bmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -3 & 4 \end{bmatrix}$$

$$b = \begin{bmatrix} 0 \\ -1 \\ 4 \end{bmatrix}$$

a plane.

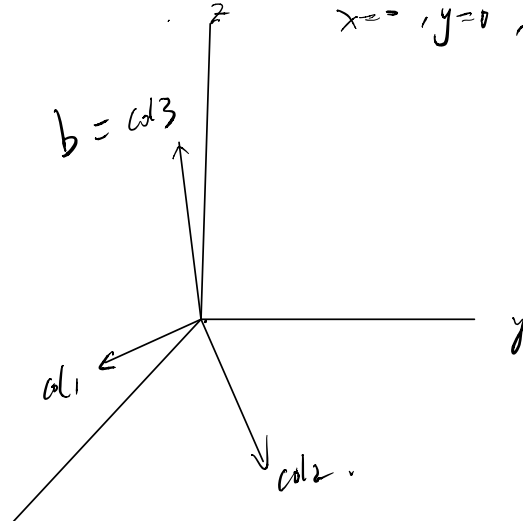
Row picture.



Column Picture.

$$x \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix} + y \begin{bmatrix} -1 \\ 2 \\ -3 \end{bmatrix} + z \begin{bmatrix} 0 \\ 1 \\ 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 4 \end{bmatrix}$$

$$x=0, y=1, z=1.$$



Do the linear combs of the columns fill 3-D space?

For this A, answer is YES.