Lecture - 1

\# n equation, n unknown $\leftarrow$ Fundamental problem of Linear Algebra
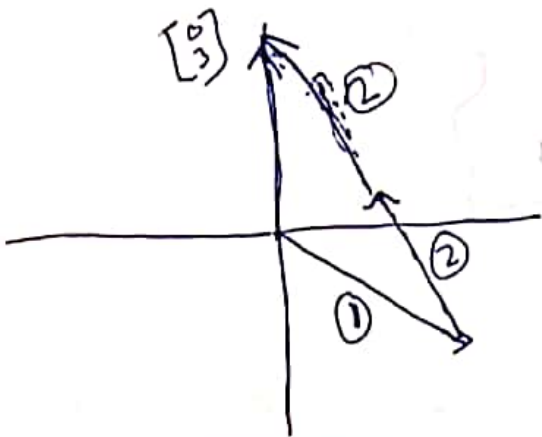
- $\rightarrow$ Row picture
- $\rightarrow$ Column picture
- $\rightarrow$ Matrix form

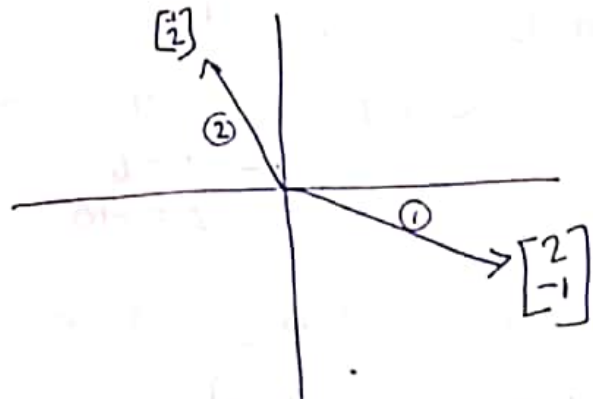Matrix $\Rightarrow$ It is just a rectangular array of numbers

Example

$$2x - y = 0$$
$$-x + 2y = 3$$

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

$$x \times \begin{bmatrix} 2 \\ -1 \end{bmatrix} + y \begin{bmatrix} -1 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 3 \end{bmatrix} \quad \leftarrow \text{Linear Combination of Column}$$

Singular

Non-Invertable

$\leftarrow$ Matrix form

$$Ax = b$$