

## ESPAÇOS VETORIAIS FUNDAMENTAIS

◦ DADA  $A_{m \times n}$ , TEMOS

$$\triangleright C(A) = \{Ax \in \mathbb{R}^m / x \in \mathbb{R}^n\}$$

$$\triangleright N(A) = \{x \in \mathbb{R}^n / Ax = 0\}$$

$$\triangleright C(A^T) = \{A^T y \in \mathbb{R}^n / y \in \mathbb{R}^m\} \rightarrow \text{ESPAÇO LINHA}$$

$$\triangleright N(A^T) = \{y \in \mathbb{R}^m / A^T y = 0\} \rightarrow \text{NÚCLEO À ESQUERDA}$$

$$\hookrightarrow A^T y = (y^T A)^T \rightarrow A^T y = 0 \iff y^T A = 0$$