ÁLGEBRA LINEAR

14/10/24

CO-FATORES

- MANEIRA DE DESCREVER O DETERMINANTE DE UMA MATRIZ $n \times n$ COMO UMA COMBINAÇÃO LINEAR DE DETERMINANTES DE MATRIZES MENORES $n-1 \times n-1$

CASO 3x3

$$\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix} = a_{11}a_{22}a_{33} + a_{12}a_{23}a_{31} + a_{21}a_{32}a_{13} - a_{13}a_{22}a_{31} - a_{11}a_{23}a_{32} - a_{21}a_{12}a_{33}$$

$$= a_{11}(a_{22}a_{33} - a_{23}a_{32}) + a_{12}(-a_{21}a_{33} + a_{23}a_{31}) + a_{13}(a_{21}a_{32} - a_{22}a_{31})$$

$$= a_{11}\begin{vmatrix} a_{22} & a_{23} \\ a_{32} & a_{33} \end{vmatrix} - a_{12}\begin{vmatrix} a_{21} & a_{23} \\ a_{31} & a_{33} \end{vmatrix} + a_{13}\begin{vmatrix} a_{21} & a_{22} \\ a_{31} & a_{32} \end{vmatrix}$$

OU

$$= \underbrace{\begin{vmatrix} a_{11} & 0 & 0 \\ 0 & a_{22} & a_{23} \\ 0 & a_{32} & a_{33} \end{vmatrix}}_{C_{11}} + \underbrace{\begin{vmatrix} 0 & a_{12} & 0 \\ a_{21} & 0 & a_{23} \\ a_{31} & 0 & a_{33} \end{vmatrix}}_{C_{12}} + \underbrace{\begin{vmatrix} 0 & 0 & a_{13} \\ a_{21} & a_{22} & 0 \\ a_{31} & a_{32} & 0 \end{vmatrix}}_{C_{13}}$$

- CO-FATOR DE $a_{ij} = (-1)^{i+j} \cdot \det(A - \text{linha } i - \text{coluna } j)$

- PARA i FIXO

$$\det A = \sum_{k=1}^{n} a_{ik} C_{ik}$$