Def determinante

$$\det(A) = |A| \overset{\text{def.}}{=} \sum_{\sigma \in P_n} \operatorname{sign}(\sigma)\, a^1_{\sigma(1)}\, a^2_{\sigma(2)} \cdots a^n_{\sigma(n)}$$

Esempio $n=2$

$$\sigma_1 = \begin{pmatrix} 1 & 2 \end{pmatrix} \qquad \sigma_2 = \begin{pmatrix} 2 & 1 \end{pmatrix}$$

$$1 \cdot a^1_1\, a^2_2 \quad + \quad (-1)\, a^1_2\, a^2_1$$

$$A = \begin{pmatrix} 3 & 1 \\ 7 & 3 \end{pmatrix} \qquad \det(A) = 1 \cdot 3 \cdot 3 + (-1)\, 1 \cdot 7 = 15 - 7 = 8$$