



**Definition**

Given a square matrix  $A \in \mathbf{R}^{n \times n}$ .

$$\sum_{\sigma \in S_n} \left( \text{sgn}(\sigma) \prod_{i=1}^n a_{i, \sigma_i} \right)$$

We denote the determinant of  $A$  by  $\det A$ .



