

# Determinant Formulas

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## 1 2x2 Determinant

For a  $2 \times 2$  matrix:

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

The determinant is:

$$\det(A) = ad - bc$$

## 2 Recursive Definition

For an  $N \times N$  matrix  $A$ :

$$\det(A) = \sum_{j=0}^{N-1} (-1)^j a_{0j} \det(M_{0j})$$

where  $M_{0j}$  is the minor formed by removing row 0 and column  $j$ .