

matrix minimax cofactor

i, j minor of A

i, j -cofactor of A



matrix minor and matrix cofactor

Let A be an $n \times n$ matrix $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. The **i, j minor of A** , denoted $M_{i,j}$ is the determinant of the $(n - 1) \times (n - 1)$ matrix formed by deleting the i^{th} row and j^{th} column of A .

The **i, j -cofactor of A** is the number. $C_{ij} = (-1)^{i+j} M_{i,j}$

Let A be an $n \times n$ matrix where $n > 2$. Then $\det(A)$ is the number found by taking the cofactor expansion along the first row of A . That is,

$$\det(A) = a_{1,1}C_{1,1} + a_{1,2}C_{1,2} + \cdots + a_{1,n}C_{1,n}.$$

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exercise 3

$$\text{Let } A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

- (a) Find the cofactor expansions along the first column.
- (b) Find the determinant of A .

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Note: using your tutorial you will cover another way to find the determinant called **the butterfly method** (only works for 3×3 matrices)

