

matrix minor and matrix cofactor

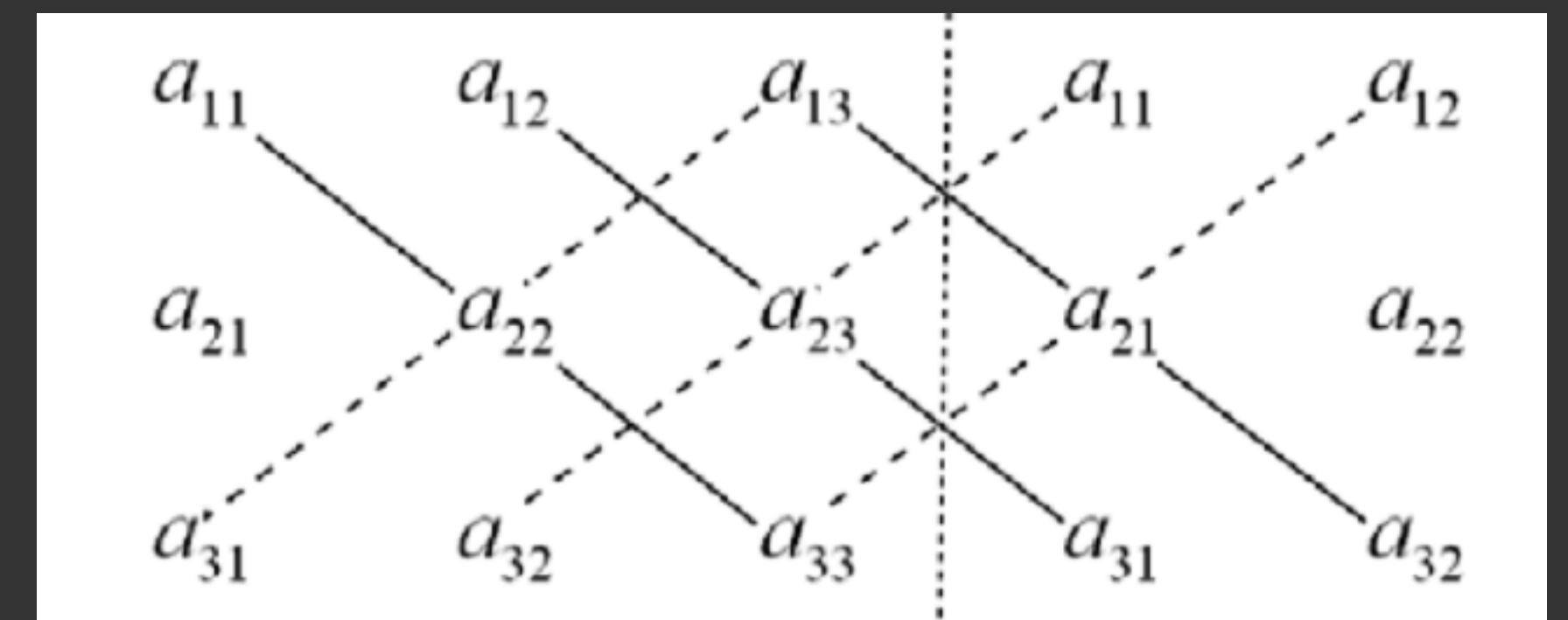
exercise 3

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

- (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)



properties of the determinant

Let A and B be $n \times n$ matrices and let k be a scalar

- $\det(kA) = k^n \cdot \det(A)$
- $\det(A^T) = \det(A)$
- $\det(AB) = \det(A)\det(B)$
- If A is invertible then

$$\det(A^{-1}) = \frac{1}{\det(A)}$$

- A matrix A is invertible if and only if $\det(A) \neq 0$
- A square matrix that has $\det(A) = 0$ is called **singular** and is not invertible