any other row (column), the sum D' of the products thus obtained is zero.

PROOF. The expansion of D with respect to the $j^{th}$ column is

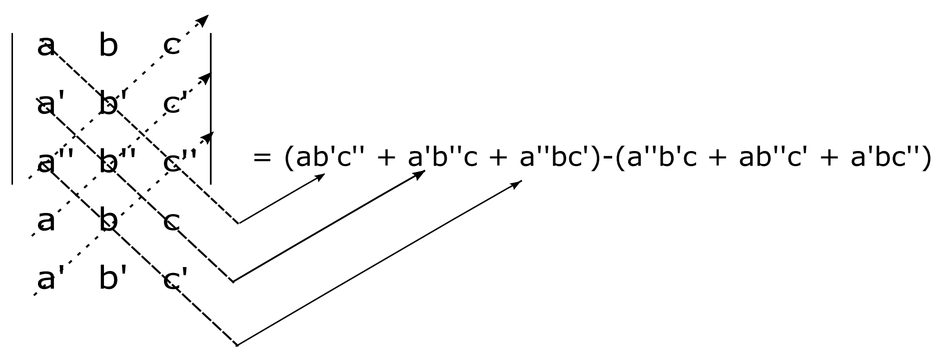
$$\text{D} = a_{lj}C_{lj} + ... + a_{nj}C_{nj},$$

and

$$\text{D'} = a_{lj}C_{lj} \ +...+ \ a_{nj}C_{nj} \Longrightarrow D' = \begin{vmatrix} ... & a_{lk} & ... & a_{lk} & ... \\ & \vdots & & \vdots & \\ ... & a_{nk} & ... & a_{nk} & ... \end{vmatrix} = 0$$

by the Corollary of Theorem 2. □

0.0.1. *Rule of Sarrus:* For determinants of order 3 and *only for these*, there is a rule for evaluation commonly used in practice. This rule of SARRUS consists of rewriting the first two rows below the third one, and then multiplying the three elements on the main diagonal, multiplying those just below these elements and multiplying three others below the latter, and then obtaining the sum of these three products; next doing the same for the elements of the secondary diagonal and related ones, obtaining a second sum of three products. Then the difference between the first and second sum gives the value of the determinant:




The rule is applied also by rewriting the first two columns after the third one.