

$$\begin{vmatrix} a & b & c \\ d & e & f \\ h & i & j \end{vmatrix} = \underbrace{(aej + bfh + cdi)}_{\text{red}} - \underbrace{(ceh + dbj + aif)}_{\text{green}}$$

Diagram illustrating the expansion of a 3x3 determinant using the rule of Sarrus. The determinant is expanded as the difference of two products of three elements each, corresponding to the two paths shown in the diagrams.

The first diagram (top right) shows the path for the first term: $aej + bfh + cdi$. The elements a, e, j are highlighted in red, b, f, h in green, and c, d, i in blue.

The second diagram (bottom right) shows the path for the second term: $ceh + dbj + aif$. The elements c, e, h are highlighted in red, d, b, j in green, and a, i, f in blue.