Second Order Determinants (2 X 2):

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$$

Ex 1: $\begin{vmatrix} 2 & -1 \\ 3 & 5 \end{vmatrix} = 2 \cdot 5 - (-1)(5) = 10 - (-5) = 10 + 5 = 15$

Ex 2: $\begin{vmatrix} 2 & 0 \\ 7 & -4 \end{vmatrix} = 2(-4) - 7 \cdot 0 = -8 - 0 = -8$

Third Order Determinants (3X3):

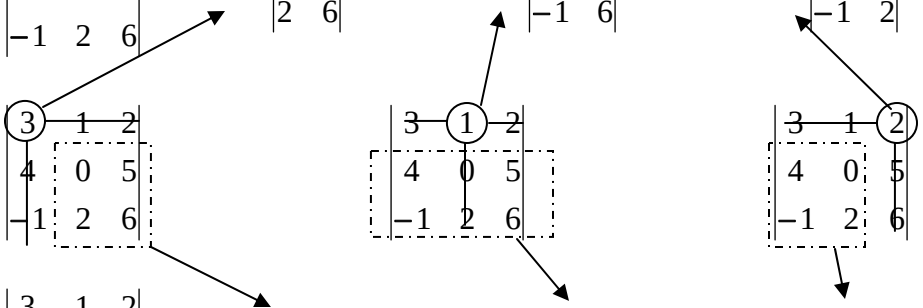
$$\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = a\begin{vmatrix} e & f \\ h & i \end{vmatrix} - b\begin{vmatrix} d & f \\ g & i \end{vmatrix} + c\begin{vmatrix} d & e \\ g & h \end{vmatrix}$$

Ex:

$$\begin{vmatrix} 3 & 1 & 2 \\ 4 & 0 & 5 \\ -1 & 2 & 6 \end{vmatrix} = 3\begin{vmatrix} 0 & 5 \\ 2 & 6 \end{vmatrix} - 1\begin{vmatrix} 4 & 5 \\ -1 & 6 \end{vmatrix} + 2\begin{vmatrix} 4 & 0 \\ -1 & 2 \end{vmatrix} = 3(6-10) - 1(24 - \{-5\}) + 2(8-0) = 3(-4) - 1(29) + 2(8)$$

$$= -12 - 29 + 16 = -25$$

$$\begin{vmatrix} 3 & 1 & 2 \\ 4 & 0 & 5 \\ -1 & 2 & 6 \end{vmatrix} = 3 \cdot \begin{vmatrix} 0 & 5 \\ 2 & 6 \end{vmatrix} - 1 \cdot \begin{vmatrix} 4 & 5 \\ -1 & 6 \end{vmatrix} + 2 \cdot \begin{vmatrix} 4 & 0 \\ -1 & 2 \end{vmatrix}$$



$$\begin{vmatrix} 3 & 1 & 2 \\ 4 & 0 & 5 \\ -1 & 2 & 6 \end{vmatrix} = 3 \cdot \begin{vmatrix} 0 & 5 \\ 2 & 6 \end{vmatrix} - 1 \cdot \begin{vmatrix} 4 & 5 \\ -1 & 6 \end{vmatrix} + 2 \cdot \begin{vmatrix} 4 & 0 \\ -1 & 2 \end{vmatrix}$$