Product of Two Determinants

- Let the two determinants of 2X2 order be :

$$\Delta_1 = \begin{vmatrix} a_1 & a_2 \\ b_1 & b_2 \end{vmatrix} \quad \text{and} \quad \Delta_2 = \begin{vmatrix} l_1 & l_2 \\ m_1 & m_2 \end{vmatrix}$$

then their product Δ will be :

$$\Delta = \begin{vmatrix} a_1 & a_2 \\ b_1 & b_2 \end{vmatrix} \begin{vmatrix} l_1 & l_2 \\ m_1 & m_2 \end{vmatrix} = \begin{vmatrix} a_1 l_1 + a_2 m_1 & a_1 l_2 + a_2 m_2 \\ b_1 l_1 + b_2 m_1 & b_1 l_2 + b_2 m_2 \end{vmatrix}$$

- Note: Multiplication of same order determinants can be done in four ways –

$$R \times R, R \times C, C \times C, C \times R$$

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