

行列式值 (Determinant)

2x2

$$\det(A) = ad - bc \quad \text{or} \quad \begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$$

$$A^{-1} = \frac{1}{\det(A)} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

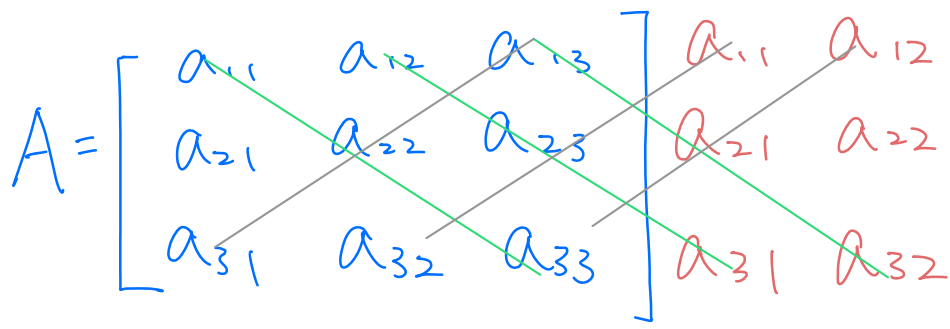
$$\underline{\text{令}} \quad A = \begin{bmatrix} 3 & 1 & -4 \\ 2 & 5 & 6 \\ 1 & 4 & 8 \end{bmatrix}$$

$$a_{11} \text{ 子行列式值} = M_{11} = \begin{vmatrix} 5 & 6 \\ 4 & 8 \end{vmatrix}$$

$$a_{11} \text{ 餘因子} = C_{11} = (-1)^{1+1} M_{11} = M_{11} = 40 - 24 = 16$$

(上、下、對角矩陣的 **determinant** 為對角乘積)

3x3 Determinant 快速求法

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$$


$$\Rightarrow \det(A) = (a_{11}a_{22}a_{33} + a_{12}a_{23}a_{31} + a_{13}a_{21}a_{32}) \\ - a_{13}a_{22}a_{31} - a_{11}a_{23}a_{32} - a_{12}a_{21}a_{33})$$