

試求 $A = \begin{bmatrix} 1 & 1+i \\ 1-i & 1 \end{bmatrix}$ 之特徵值

解: 由 $\det(A - \lambda I_2) = 0$

$$\text{得 } \begin{vmatrix} 1-\lambda & 1+i \\ 1-i & 1-\lambda \end{vmatrix} = 0$$

$$\Rightarrow (1-\lambda)(1-\lambda) - (1-i)(1+i) = 0$$

$$\Rightarrow 1 - 2\lambda + \lambda^2 - (1 - i^2) = 0, \quad i^2 = -1$$

$$\Rightarrow 1 - 2\lambda + \lambda^2 - 2 = 0$$

$$\Rightarrow \lambda^2 - 2\lambda - 1 = 0$$

$$\Rightarrow \lambda = 1 \pm \sqrt{2}$$