$$e.g.q = \lambda$$

$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

$$A - qI = 0$$

$$\begin{bmatrix} a-q & b \\ c & d-q \end{bmatrix} = 0$$

$$(a-q)(d-q) - bc = 0$$

$$q^2 - (a+d)q + ad - bc = 0$$

$$mq^2 + nq + o = 0$$

$$m = 1, n = -(a+d), o = ad - bc$$

$$q = \frac{-n \pm \sqrt{n^2 - 4mo}}{2m}$$

q 即是 A 的 eigenvalue

把 q 代回去 A，並做列消去形成 B

$$B = \begin{bmatrix} a-q & b \\ 0 & 0 \end{bmatrix}$$

$$B\underline{x} = 0$$

$$\underline{x} = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} -b/\min(a-q, b) \\ a-q/\min(a-q, b) \end{bmatrix}$$ ※$\min(a,b)$: *找a和b之間的最小值*

x 即是 A 的 eigenvector