Compute Eigenvalues

Find the eigenvalues $\lambda_{1,2} \in \mathbb{C}$ of the matrix

$$A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}.$$

Solution:

The λ, who hold the equation $\det(A - \lambda I) = 0$ are the eigenvalues of the matrix A.

$$\begin{aligned} \det(A - \lambda I) &= \det \begin{pmatrix} -\lambda & 1 \\ -1 & -\lambda \end{pmatrix} \\ &= \lambda^2 + 1 \end{aligned}$$

$$\Rightarrow \det(A - \lambda I) = 0 \text{ for } \lambda \in \{+i, -i\}$$