

# Finding All Eigenvalues and Eigenvectors

- In summary, we can find all the possible eigenvalues and eigenvectors, as follows.
- First, find all the eigenvalue by solving the **characteristic equation**:

$$\det(A - \lambda I) = 0$$

- Second, for each eigenvalue  $\lambda$ , solve for  $(A - \lambda I)\mathbf{x} = \mathbf{0}$  and obtain the set of basis vectors of the corresponding eigenspace.