

## Step-1

We have to prove that the inverse of a Hermitian matrix is also Hermitian.

## Step-2

Let  $A$  be a Hermitian matrix.

$$\text{Then } A^H = A$$

Let  $A^{-1}$  be the inverse of  $A$ .

$$\text{Then } AA^{-1} = I$$

Now

$$\begin{aligned} (AA^{-1})^H &= (I)^H \\ \Rightarrow (A^{-1})^H A^H &= I \quad (\text{since } I^H = I) \\ \Rightarrow (A^{-1})^H A &= I \quad (\text{since } A^H = A) \end{aligned}$$

Therefore  $(A^{-1})^H$  is the inverse of  $A$ .

Hence  $A^{-1}$  is also Hermitian matrix.

Hence the inverse of a Hermitian matrix is again a Hermitian matrix.