

## Step-1

Given that  $A = R + iS$  is a Hermitian matrix.

We have to verify that the real matrices  $R$  and  $S$  are symmetric or not.

## Step-2

Now

$$\begin{aligned} A^H &= A \\ \Rightarrow (R + iS)^H &= (R + iS)^H \\ &= R^H - iS^H \end{aligned}$$

Since  $R, S$  are real matrices.

$$\text{So } R^H = R^T \text{ and } S^H = S^T$$

$$\Rightarrow R = R^T \text{ and } S = -S^T$$

Hence  $R$  is symmetric and  $S$  is skew-symmetric.