MATLAB: University of California, Davis

Computer LAB for Linear Algebra Dr. Daddel

MATH 22AL LAB # 10

13 Hermitian matrix:

A square matrix A is called **Hermitian** if

$$\overline{A^T} = A$$

Example:

The following matrix is hermitian because $\overline{A^T} = A$

Type the following matrix in MATLAB

$$A = \begin{bmatrix} 2 & -4+7i \\ -4-7i & 3 \end{bmatrix}$$

type	A'	

You should see :

$$\overline{A^T} = \overline{\begin{bmatrix} 2 & -4-7i \\ -4+7i & 3 \end{bmatrix}} = \begin{bmatrix} 2 & -4+7i \\ -4-7i & 3 \end{bmatrix} = A$$

It can be proved that the eigenvalues of a hermitian matrix are real numbers.

type	`[ W  V] =eig(A)`	

Since a hermitian matrix with real entries is symmetric, we can conclude that the eigenvalues of a symmetric matrix with real entries are real numbers.

In MATLAB the command htranspose(A)
returns the Hermitian transpose A^H of the matrix A (the complex conjugate of the transpose of A).

type	`[ W  V] =eig(A)`	