15.8: Hermitian Matrices

A Hermitian matrix (or self-adjoint matrix) is a square matrix with complex entries that is equal to its own conjugate transpose. In other words, $a_{ij} = a_{ji}^*$ for all entries. The elements in the diagonal need to be real, because these entries need to equal their complex conjugates: $a_{ii} = a_{ii}^*$:

$$\begin{pmatrix} a & b+ci & d+ei \\ b-ci & f & g+hi \\ d-ei & g-hi & j \end{pmatrix}$$

where all the symbols in this matrix except for i represent real numbers.

Hermitian matrices are a generalization of the symmetric real matrices we just talked about, and they also have real eigenvalues, and eigenvectors that form a mutually orthogonal set.

Need help? The link below contains solved examples:

- An example from a midterm: Eigenvectors, Eigenvalues, Inverse, Orthogonality, Hermitiannon Hermitian http://tinyurl.com/n38938e