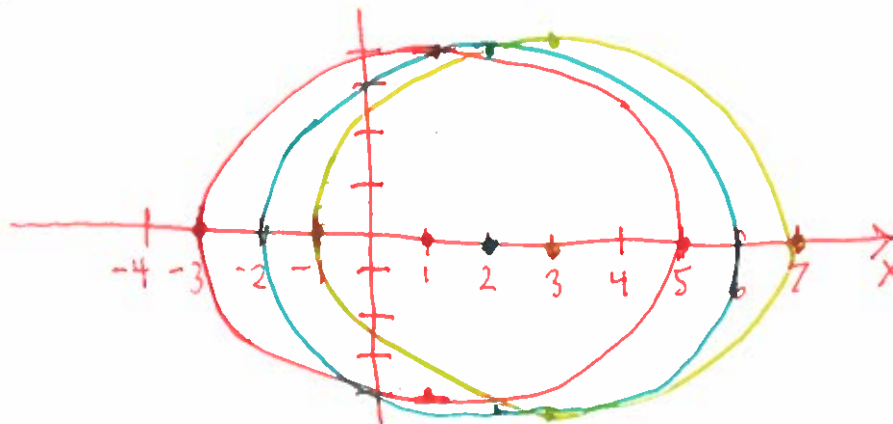


MTH 225
Quiz #9

1. Suppose $A \in M_{n \times n}(\mathbb{C})$ is given by

$$A = \begin{bmatrix} 1 & 2i & 2i \\ -2i & 2 & 2i \\ -2i & -2i & 3 \end{bmatrix}.$$

(a) Sketch the Gershgorin disks for this problem.



(b) Show that A is a Hermitian matrix.

$$A^* = \begin{bmatrix} 1 & 2i & 2i \\ -2i & 2 & 2i \\ -2i & -2i & 3 \end{bmatrix} = A$$

(c) Without calculating the eigenvalues, use the Gershgorin disks and the fact that A is Hermitian to provide ranges for the possible eigenvalues of A .

$$\lambda \in [-3, 7]$$