Name:_____

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Multivariable and Complex Analysis Quiz II

SHOW ALL WORK TO RECEIVE FULL CREDIT

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1. (20) Show that 7 is an eigenvalue of A, and find the corresponding eigenvectors.

$$\mathbf{A} = \begin{bmatrix} 1 & 6 \\ 5 & 2 \end{bmatrix}$$

2. (20) Is matrix B diagonalizable? *To receive full credit, you must give a compelling reason as to why or why not.*

$$B = \begin{bmatrix} 5 & -8 & 1 \\ 0 & 0 & 7 \\ 0 & 0 & -2 \end{bmatrix}$$

3. (20) Find the characteristic equation for matrix C and determine how many distinct eigenvalues matrix C possess.

$$C = \begin{bmatrix} 5 & -2 & 6 & -1 \\ 0 & 3 & -8 & 0 \\ 0 & 0 & 5 & 4 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

4. (20) Which term(s) best describe matrix D; Hermitian, Skew-Hermitian, or Unitary? Find its eigenvalues and eigenvectors.

$$D = \begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$$