Math 54: Quiz #5

March 9

GSI: M. Lindsey

Name: _____

Please give neat and organized answers. Whenever applicable (especially for computational questions), make it clear what strategy you are using.

Problem 1

Find a matrix that is not diagonalizable. (Clearly justify that it is not diagonalizable.)

Problem 2

Let A be a diagonalizable $n \times n$ matrix, and let Q be an invertible matrix. Show that $Q^{-1}AQ$ is diagonalizable.

Bonus: Suppose that A and B are $n \times n$ matrices and that A is invertible. Show that the characteristic polynomial of AB is the same as the characteristic polynomial of BA.