Problem 1: Define:

a) Similar

b) Eigenvalue

c) Eigenvector

d) Diagonal Matrix

Problem 2: First, define "Diagonalizable." (Hint: You should use two of the terms in problem 1.)

Then, give an example of a 2x2 matrix that is not diagonalizable. Give an example of a 2x2 matrix that is diagonalizable.

Problem 3: Are all diagonal matrices diagonalizable? Use the definition to prove your answer.