KFUPM/ Department of Mathematics & Statistics/ 173/ MATH 208-01/ Quiz 3

Name: **ID #:** **Serial #:**

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1. [12pts] The matrix $A = \begin{bmatrix} 4 & -3 & 1 \\ 2 & -1 & 1 \\ 0 & 0 & 2 \end{bmatrix}$ has an eigenvalue λ of multiplicity 2. Find a basis and the dimension of the eigenspace E_λ.

2. [8pts] Determine whether or not the matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 2 & 1 \\ 3 & 0 & 1 \end{bmatrix}$ is diagonalizable. If it is, find a diagonalizing matrix P and a diagonal matrix D such that $D = P^{-1}AP$.