Name:

## Linear Algebra II - Quiz 9

All the solutions should be properly justified and explained. Clarity of the presentation will also be rewarded.

The maximal number of points awarded is 10.

1. Let A be a square matrix. We suppose that A has an eigenvector  $\vec{v}$  associated with eigenvalue 3. Is  $\vec{v}$  necessarily an eigenvector of the matrix  $A^3 - 4A$ ? If it is the case, give the associated eigenvalue.

2. Find (all) the eigenvectors of M associated with the eigenvalue 2 where

$$M = \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}.$$