

Quiz #1

Justify all your answers completely (Or with a proof or with a counter example) unless mentioned differently. No step should be a mystery or bring a question. The grader cannot be expected to work his way through a sprawling mess of identities presented without a coherent narrative through line. If he can't make sense of it in finite time you could lose serious points. Coherent, readable exposition of your work is half the job in mathematics. You will loose serious points if your exposition is messy, incomplete, uses mathematical symbols not adapted...

Problems: Let

$$A = \begin{pmatrix} 1 & 3 \\ 4 & 2 \end{pmatrix}$$

1. Give the definition of the characteristic polynomial and the characteristic equation of A . Compute then for A .
2. Deduce the eigenvalues of A and give their multiplicities.
3. Compute a basis for each eigenspaces and give their dimensions.
4. Deduce if A is diagonalizable, and if so diagonalize A .
5. Give a basis for $Col(A)$ and $Row(A)$.