The Rank of a Matrix, Eigenvectors and Eigenvalues

MATH 204: Linear Algebra

Prepare for class December 3, 2018 (Happy December!)   Name (Print): _____

After reading Section 4.6 and Section 5.1, work through the following ideas. The first question is from Section 4.6, while the remaining questions are from 5.1.

1. The text states six additional statements that could be added to the Invertible Matrix Theorem, that is, six new statements that are logically equivalent to the statements in the original theorem.

    (a) What are these additional statements? Do you believe these are logically equivalent to the original statements?

    (b) The text also states that there are other statements that could be added as well – LOTS of other statements. Write three of them and explain why it is unnecessary to include them.

2. State the definitions of eigenvector and eigenvalue.

3. Let $A = \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$, $\vec{u} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$, and $\vec{v} = \begin{bmatrix} 2 \\ -2 \end{bmatrix}$. Are $\vec{u}$ and $\vec{v}$ eigenvectors of A? Justify.

4. Try Exercise 1 on page 273.

5. What is the warning on top of page 270? Be careful!!!

6. Write down any questions you have on the reading.