Individual Quiz #07 (17/12/2013)
(15 Mins)

Name _____ ID_____Group_____

Part I: True (T) |False (F) questions. (1 mark each.)

1. ____ In any vector space, a sequence of vectors is a basis of the vector space if and only if each vector in the space can be expressed as a linear combination of vectors in that sequence.

2. ____ The trivial space $\{\vec{0}\}$ has only one basis which is the $\langle\vec{0}\rangle$.

3. ____ No 2 vectors can span $\Re^3$.

4. ____ The dimension of the vector space of matrices $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ where $a + d = 0$ is 4.

Part II: Answer the questions and <u>show how to solve the questions</u>. (2 marks each.)

5. Determine whether $\langle\begin{pmatrix} 1 \\ -2 \end{pmatrix}, \begin{pmatrix} 3 \\ 1 \end{pmatrix}, \begin{pmatrix} -1 \\ 1 \end{pmatrix}\rangle$ is a basis for $\Re^2$.

6. What is the dimension of the vector space M_{3x5} of 3x5 matrices?

7. Find the rank of this matrix $\begin{bmatrix} 1 & 3 & 2 \\ 5 & 1 & 1 \\ 6 & 4 & 3 \end{bmatrix}$