MATH 196 QUIZ 2 AUGUST 4, 2017

Please show **all** your work! Answers without supporting work will not be given credit.
Clearly mention what theorem(s), if any, you are using.
Write answers in spaces provided.
You have 30 minutes to complete this Quiz.
You can get MAXIMUM ()40 marks.

Name:

1. Consider the matrix

$$A = \begin{bmatrix} 1 & 2 & 0 & 0 & 3 & 0 \\ 0 & 0 & 1 & 0 & 2 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

   (a) Find vectors that span the Image of A.

   (b) Find a basis for $Ker(A)$ and find its dimension.

2. (a) Consider the straight line L in the coordinate plane with the equation $y = 2x$. Let $\vec{u} = 3\hat{i} + 4\hat{j}$. Find the projection vector of $\vec{u}$ in L.

   (b) Find $\|\vec{u}\|$.

   (c) What is the matrix of this linear transformation T?

   (d) What is the matrix of the linear transformation T^3?