MATLAB:

Computer LAB for Linear Algebra   Dr. Daddel

MATH 22AL   LAB # 6

Start Typing in MATLAB

7   Example 3:

Enter $A = B'$ or type $A = \begin{bmatrix} 1 & 4 \\ 2 & 0 \\ 3 & 1 \end{bmatrix}$ and find $RA = rref(A)$ you should get

$RA = \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 0 & 0 \end{bmatrix}$

So the row space of A is a 2-dimensional subspace of R^2. That is $row(A) = R^2$ (why?).

Enter your answer as:

type	% ANS2= type your answer
type	$REFA = rref(A)$
type	$RANKA = rank(A)$

Type two vectors that form a basis for the row space of A. Type your answer as R1A= for the first vector and R2A= for the second vector:

type	$R1A =$
type	$R2A =$

8   Notice that

- The matrix in example 3 is the transpose of the matrix in example 2. Both sub spaces (row space and column spaces) have the same dimension ($= 2$) but they are subspaces of different vector spaces.

- The $row(A)$ in example 2 is a two-dimensional subspace of R^3. But $row(A)$ in example 3 is a two-dimensional subspace of R^2.

- he subspace in example 3, $row(B) = row(A')$ is the column space of the matrix in example 2. In general one can prove that dimension of the row space of a matrix is equal to the dimension of the column space of the matrix, which is called $rank(A)$.