MATLAB:
University of California, Davis

Computer LAB for Linear Algebra   Dr. Daddel

MATH 22AL   LAB # 6

4   Background, Reading Part :

Start Typing in MATLAB

4.4   Example 1:

Let $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & 1 \end{bmatrix}$.

type	$B = [1\ 2\ 3; 4\ 0\ 1]$.

Before continuing using MATLAB consider the set of all linear combinations of the row vectors of B.

This is a subspace of R^3 spanned by the vectors $r_1 = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$ and $r_2 = \begin{bmatrix} 4 & 0 & 1 \end{bmatrix}$.

First note that the two vectors r_1 and r_2 are linearly independent (Why?).

Enter your answer as:

type	`% ANS1= type your answer`

So these two vectors r_1 and r_2 form a basis for the row space of B. Since B is a simple matrix of small size, you should also be able to justify that the row space of B is a subspace of R^3 but it is not R^3, which means that row vectors of B do not span R^3. In other words there are vectors in R^3 which are not in the row space of B.

For large matrices finding out this information is not that simple. You could get some information about the dimension of the row space or column space using the size of the matrix. Another useful MATLAB command is $rref(B)$.