MATLAB: University of California, Davis

Computer LAB for Linear Algebra Dr. Daddel

MATH 22AL LAB # 6

Start Typing in MATLAB

19 Exercise 4 :

Let $AB = \begin{bmatrix} 3 & 9 & -7 & -2 & 6 & -3 & -1 \\ 2 & 6 & 0 & 8 & 4 & 12 & 4 \\ 2 & 6 & 5 & 18 & 4 & 33 & 11 \\ 3 & 9 & -2 & 8 & 6 & 18 & 6 \end{bmatrix}$

a.)

(Enter AB in MATLAB.)

type	`ABRF= rref(AB)`

Decide what is the rank of AB and what is nullity of AB, then enter them in the following format:

type	`RANKAB= your answer for rank of AB`
type	`NULLAB= your answer for nullity of AB`

Recall that to show that a vector b in column space of a matrix AB you need to show that the linear system $(AB)X = b$ is consistent. you may do this in one of the following way:

- **Show that** $rank(AB) = rank([AB \;\; b])$.
- **Finding** $rref(AB)$

b.) Which of the following vectors is in the column space of AB? (you need to enter these vectors as column matrices in MATLAB.)

1. W1=(6, 4, 4, 6)
2. W2=(6, 16, 4, 0)
3. W3=(-4, 16, 40, 20)

type	`% W1 = true`	if W1 is in column space of AB.
	`% W1 = false`	if W1 is not in column space of AB.
	`% W2 = true`	if W2 is in column space of AB.
	`% W2= false`	if W1 is not in column space of AB.
	`% W3 = true`	if W3 is in column space of AB.
	`% W3 = false`	if W3 is not in column space of AB.