Math 304 (Linear Algebra), Section 2 Your name: KEY

Quiz 2

September 17, 2010

0. I allow to return this and future graded quizzes (not exams) to me in a common pile so that other students can possibly see my grade (circle appropriate box)

Yes	No	Signature

1. Let A be a matrix. Complete the following definitions

(a) A column in matrix A is called pivot if it contains a leading entry when A is reduced to REF.

(b) The rank of matrix A is the number of pivot columns in A

2. Let

$$A = \begin{pmatrix} 0 & 1 & 2 \\ -1 & -2 & 1 \end{pmatrix}, \qquad B = \begin{pmatrix} 2 & 0 & 1 \\ -1 & 0 & 1 \\ 3 & 0 & 0 \end{pmatrix}$$

State which of the following is defined and compute corresponding expressions.

(a) AB

$$AB = \begin{bmatrix} 0 & 1 & 2 \\ -1 & -2 & 1 \end{bmatrix} \begin{bmatrix} 2 & 0 & 1 \\ -1 & 0 & 1 \\ 3 & 0 & 0 \end{bmatrix} = \left[\begin{array}{c|c|c} 0\cdot 2+1\cdot(-1)+2\cdot 3 & 0\cdot 0+1\cdot 0+2\cdot 0 & 0\cdot 1+1\cdot 1+2\cdot 0 \\ \hline (-1)2+(-2)\cdot(-1)+1\cdot 3 & (-1)\cdot 0+(-2)\cdot 0+1\cdot 0 & (-1)\cdot 1+(-2)\cdot 1+1\cdot 0 \end{array}\right] = \begin{bmatrix} 5 & 0 & 1 \\ 3 & 0 & -3 \end{bmatrix}$$

(b) BA

NOT DEFINED

(c) A+B

NOT DEFINED

(d) 2A

$$2A = \begin{bmatrix} 0 & 2 & 4 \\ -2 & -4 & 2 \end{bmatrix}$$