

Key

Time for quiz : 15 minutes

(it took me 3 minutes to make this key, so you may want to speed up if you didn't finish)

Math 1711

Finite Math

Spring '14

Quiz 7

Show all your work to receive full credit. Use the following to answer questions 1&2.

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

1. Compute AB , or say it is not defined. Is BA defined? yes (3 pts. each)

$$AB = \begin{matrix} 3 \times 2 & & 2 \times 3 & & 3 \times 3 \\ \begin{bmatrix} 2 & 0 \\ 1 & 2 \\ 3 & 2 \end{bmatrix} & \begin{bmatrix} 1 & 1 & 0 \\ 2 & 2 & 1 \end{bmatrix} & = & \begin{bmatrix} 2 & 2 & 0 \\ 5 & 5 & 2 \\ 7 & 7 & 2 \end{bmatrix} \end{matrix}$$

2. Find the reduced row echelon form of A and B using Gauss-Jordan elimination. (3 pts. each)

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

3. Let

$$A = \left[\begin{array}{ccc|c} 2 & 1 & 3 & 3 \\ 1 & 0 & -1 & 2 \end{array} \right] \quad \text{rref}(A) = \left[\begin{array}{ccc|c} 1 & 0 & -1 & 2 \\ 0 & 1 & 5 & -1 \end{array} \right].$$

Suppose that A is the augmented matrix of a linear system of equations and that $\text{rref}(A)$ is the reduced row echelon form of A . Write down the system of equations that A represents and find all solutions to this system. (3 pts.)

$$2x + y + 3z = 3$$

$$x - z = 2$$

$$x = 2 + z$$

$$y = -1 - 5z$$

$$z = \text{free}$$