Elementary Linear Algebra - MATH 2250 - Quiz 2

Name:

Consider the following system and answer only TWO of the following questions.

$$\begin{cases} x + 2y = 5 \\ -2x + 3y = 0 \end{cases}$$

1. [T] [F] A pivot can be any number.
   [T] [F] for two matrices A and B always $AB = BA$.
2. What are the two pivots of the above system after elimination? Show steps.

3. Does the elimination process for the system above fail or succeed? Why?

4. Write down the augmented matrix for the above system and solve the system, using forward elimination and back substitution.

5. Find the elementary matrix $E_{3,1}$ that satisfies the following matrix multiplication:

$$\begin{bmatrix} & & & \\ & & & \\ & & & \\ & & & \end{bmatrix} \begin{bmatrix} -2 & 5 & 3 & 9 \\ 0 & 6 & -1 & 2 \\ 2 & 3 & 0 & 1 \\ 1 & 0 & -6 & 7 \end{bmatrix} = \begin{bmatrix} -2 & 5 & 3 & 9 \\ 0 & 6 & -1 & 2 \\ 0 & 8 & 3 & 10 \\ 1 & 0 & -6 & 7 \end{bmatrix}$$

6. What is the $(3, 2)$-entry of the matrix M?

$$M = \begin{bmatrix} -2 & 5 & 3 & 9 \\ 0 & -6 & -1 & 2 \\ 2 & 3 & 0 & 1 \\ 1 & 0 & -6 & 7 \end{bmatrix} \begin{bmatrix} -2 & 5 & 3 & 9 \\ 0 & -6 & -1 & 2 \\ 2 & 3 & 0 & 1 \\ 1 & 0 & -6 & 7 \end{bmatrix}$$