Instructor: Prof. A. Suciu **Name:** _____

MTH 1101 **Applications of Algebra** **Spring 2000**

QUIZ 3

Instructions: Put your name in the blanks above. Put your final answers to each question in the designated spaces on these pages. Show your work—if there is not enough room, use another sheet.

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(1) Evaluate:

$$\begin{bmatrix} 5 & 0 & -4 \\ -1 & 3 & 7 \\ 12 & -2 & -5 \end{bmatrix} - \begin{bmatrix} -2 & -9 & 10 \\ 4 & 1 & 15 \\ -7 & 2 & -6 \end{bmatrix} =$$

(2) Evaluate:

$$\begin{bmatrix} 5 & 0 & -4 \\ -1 & 3 & 7 \end{bmatrix} \cdot \begin{bmatrix} -2 & -9 \\ 4 & 1 \\ -7 & 2 \end{bmatrix} =$$

(3) Find the values of the variables x, y, and z for which the following matrix equality holds:

$$\begin{bmatrix} x-1 & 0 \\ 2y & 9 \\ -1 & 7 \end{bmatrix} = \begin{bmatrix} 5-x & 0 \\ y & 9 \\ -1 & z \end{bmatrix}$$

(4) Let:

$$A = \begin{bmatrix} 4 & 1 \\ 2 & 1 \end{bmatrix}, \qquad B = \begin{bmatrix} 2 & 3 \\ 4 & 6 \end{bmatrix}, \qquad C = \begin{bmatrix} -3 & 5 \end{bmatrix}.$$

For each of the following, indicate whether the operation is possible, and, if it is, compute the result.

(a) $A + B =$

(b) $A + C =$

(c) $A \cdot C =$

(d) $C \cdot A =$

(e) $A^{-1} =$

(f) $B^{-1} =$

(g) $C^{-1} =$