

MATH 1090 - SUMMER 2007 - ASSIGNMENT #9

SYSTEMS OF LINEAR EQUATIONS

(1) Find the corresponding matrices to the following systems of linear equations:

$$A \begin{cases} 2x - 3y = 20 \\ x + y = 12 \end{cases} \quad B \begin{cases} 5x = 15 \\ -4x + 6y + z = 23 \end{cases}$$

$$C \begin{cases} 3x - y + 2z = 0 \\ 5x + 2(z - y) - 3 = y \end{cases} \quad D \begin{cases} -y + 2x = 5 \\ x = 2 + x \end{cases}$$

(2) Find the systems of equations which correspond to the following matrices:

$$A = \left(\begin{array}{cc|c} 5 & 4 & 11 \\ 2 & 3 & 12 \end{array} \right) \quad B = \left(\begin{array}{cc|c} 0 & -2 & 3 \\ 1 & 0 & 4 \end{array} \right)$$

$$C = \left(\begin{array}{ccc|c} -1 & 0 & 2 & 5 \\ 3 & 2 & 3 & 22 \\ 1 & 0 & 0 & 31 \end{array} \right) \quad D = \left(\begin{array}{ccc|c} 1 & 0 & 0 & -12 \\ 0 & 0 & 1 & \frac{2}{5} \\ 0 & 0 & 0 & 0 \end{array} \right)$$

(3) Solve the following systems of linear equations using matrix reduction. Remember that sometimes it pays to reorder the equations, and to divide or multiply an equation by a number.

$$A \begin{cases} x + 2y = 8 \\ 2x + y = 7 \end{cases} \quad B \begin{cases} x + 2y = 2 \\ 2x + 3y = 1 \end{cases}$$

$$C \begin{cases} x + 2y = 10 \\ 5x - 6y = 18 \end{cases} \quad D \begin{cases} 4x - 6y = 10 \\ x + 3y = 1 \end{cases}$$

$$E \begin{cases} 4x + 2y = -5 \\ 2x - 3y = 1 \end{cases} \quad F \begin{cases} 2x - y = 5 \\ 3x - 2y = 2 \end{cases}$$

(4) Solve the following systems using matrix reduction:

$$A \begin{cases} x + 2z = 1 \\ y + z = 1 \\ 3x + z = 3 \end{cases} \quad B \begin{cases} x + y + 4z = 1 \\ -x + 2y - z = 8 \\ 2x + 3z = 2 \end{cases}$$

$$C \begin{cases} x - 2y + 2z = 3 \\ 2x + 3y - z = 5 \\ 3x - y + z = 4 \end{cases}$$