

ECONOMICS 207
FALL 2006
PROBLEM SET 7

Problem 1. For each of the following systems of equations, find the solution vector $\begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$ or $\begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix}$ by appending the right-hand side vector to the coefficient matrix and performing row reduction.

(i)

$$\begin{pmatrix} -1 & 1 \\ 2 & -3 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} -2 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} 2 & -1 & 4 \\ 1 & 0 & 2 \\ 4 & -1 & 7 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 11 \\ 5 \\ 19 \end{pmatrix}$$

Problem 2. Consider the following matrices.

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

$$D = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 5 & 2 \\ -3 & -4 & -2 \end{bmatrix}, \quad E = \begin{bmatrix} 1 & -3 & 2 \\ -2 & 5 & -2 \\ 4 & -11 & 7 \end{bmatrix}, \quad F = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 5 \\ 3 & 5 & 7 \end{bmatrix}$$

(i) (a) Find the determinant of A.

(b) Find the inverse of A.

(a) Find the determinant of C .

(b) Find the inverse of C .

(a) Find the determinant of D .

(b) Find the inverse of D .

(a) Find the determinant of F .

(b) Find the inverse of F .