Wilf Csaplar Jr.   Business 205   Homework #6   **Due Monday 4/1**

Place your name on the back of this sheet of paper and nowhere else. Staple your answers face up on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

Show all work on all questions.

1) (35 points) Suppose the demand and supply equations were given by the following:

$Q_1^D = 200 - 4P_1 + P_2 - 2P_3$ $\qquad\qquad$ $Q_1^S = 25P_1 - 5$

$Q_2^D = 150 + 2P_1 - 3P_2$ $\qquad\qquad$ $Q_2^S = 6P_2 - 20$

$Q_3^D = 95 - P_1 - 2P_3$ $\qquad\qquad$ $Q_3^S = P_3 - 30$

Set up the system of equations and solve for the equilibrium levels of Q_1, Q_2, Q_3, P_1, P_2, and P_3. Which two products are complements, and which two are substitutes? Explain your logic.

2) (10 points) Suppose that a farm is growing corn for consumption (C), corn for ethanol (E), and corn for feed (F). Set up the Leontief input-output matrix if one unit of corn for consumption uses .1 units of corn for consumption (seeds) and .2 units of corn for ethanol (for the tractor). One unit of corn for ethanol uses .3 units of corn for ethanol (for the processing) and .1 units of corn for consumption (seeds). Corn for feed uses .1 units of corn for feed (for seeds) and .2 units of corn for ethanol. Briefly explain how you determined which numbers went in each spot.

3) (5 points) Suppose $\begin{bmatrix} X & 3 \\ Y & 2 \end{bmatrix} = \begin{bmatrix} Y+2 & 3 \\ 4 & 2 \end{bmatrix}$. Then how much are X & Y? Briefly explain what you did.

4) (10 points each) If $A = \begin{bmatrix} 1 & 3 \\ -2 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & -1 \\ 2 & -4 \end{bmatrix}$, and $C = \begin{bmatrix} 6 & 7 \\ -3 & 0 \end{bmatrix}$, then find the results for each of the following calculations:

A) 2A + B

B) AC

C) CA

D) 3B – 2C

E) AA