Name: _____

Exam 1
February 13, 2006

Math 210
Lecture 1
Shirin Malekpour

I	20 Points	
II	20 Points	
III	20 Points	
IV	20 Points	
V	20 Points	
Total	100 Points	

WRITE YOUR NAME ON EVERY ANSWER SHEET.
SHOW YOUR REASONING. YOU NEED TO SHOW WORK TO GET FULL CREDIT.

GOOD LUCK!

Name: _____

I. (20 points.) Solve the following system:

$$\begin{cases} x_1 + x_2 + x_3 + x_4 &= 0 \\ 2x_1 + 2x_2 + x_3 + x_4 &= 0 \end{cases}$$

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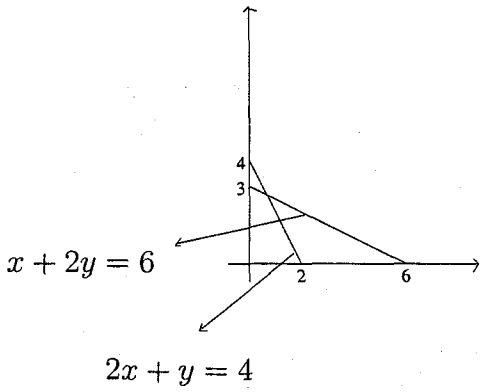
II. (20 points.) Find the feasible set defined by $2x + y \geq 4$, $x + 2y \geq 4$, $x \geq 0$ and $y \geq 0$. Maximize the objective function $x + y$ on the found feasible set.



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III. (20 points.)

(A) Find the inverse of matrix A, if possible.

$$A = \begin{bmatrix} 2 & 1 \\ 3 & 1 \end{bmatrix}$$

(B) Find a 2×2 matrix B, such that $AB = C$.

$$C = \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$$

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IV. (20 points.) An economy has 3 goods, electricity, gas and lumber. To produce 1 unit of electricity we need .2 units of electricity and .1 units of gas. For production of 1 unit of gas, we need .4 units of electricity and .1 units of lumber. .1 units of gas and .2 units of lumber are need in production of 1 unit of lumber.

(A) Find the technology matrix for this economy.

(B) Find the external demand which is satisfied by production of 100 units of electricity, 150 units of gas and 100 units of lumber.

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V. (20 points.) A coin collection consists of 37 coins, nickels, dimes and quarters. If the collection has the face value of \$3.25 and there are 5 more dimes than there are nickels, how many of each coin are in the collection?