Assignment 1

NOTE: Solve all the questions graphically. Assignment should be in your own handwriting.

1.

A company that operates 10 hrs a day manufactures two products on three sequential processes. The following table summarizes the data of the problem:

	Minutes per unit			
Product	*Process 1*	*Process 2*	*Process 3*	Unit profit
1	10	6	8	$20
2	5	20	10	$30

Determine the optimal mix of the two products.

2.

A company produces two products, A and B. The sales volume for A is at least 80% of the total sales of both A and B. However, the company cannot sell more than 110 units of A per day. Both products use one raw material, of which the maximum daily availability is 300 lb. The usage rates of the raw material are 2 lb per unit of A, and 4 lb per unit of B. The profit units for A and B are $40 and $90, respectively. Determine the optimal product mix for the company.

3.

Determine the feasible space for each of the following independent constraints, given that $x_1, x_2 \geq 0$.

(a) $-3x_1 + x_2 \leq 6$.

(b) $x_1 - 2x_2 \geq 5$.

(c) $2x_1 - 3x_2 \leq 12$.

(d) $x_1 - x_2 \leq 0$.

(e) $-x_1 + x_2 \geq 0$.