Math 7502

Homework 2

Due: January 24, 2008

In this homework you will work on two problems with the simplex method, as presented in class. For both follow the instructions:

(a) Find an initial basic feasible solution for the system in canonical form.

(b) Check whether it is optimal.

(c) Search for another basic feasible solution.

(d) Move to this better solution.

(e) Go back to (b).

(f) After you find the optimal solution with the simplex method, graph the feasible region in standard form, and show the successive vertices of it visited during the simplex method.

Provide explanations for each step, as done in class.

1. (Continuation from Homework 1)

   Maximize the daily profit in manufacturing two alloys A_1 and A_2 which are different mixtures of two metals M_1 and M_2 as shown:

Metal	Proportion of metal In Alloy A_1	Proportion of metal In Alloy A_2	Daily supply in tons
M_1	0.5	0.25	10
M_2	0.5	0.75	15
Net Profit per ton	30	25	

2. Maximize $3x_1 + 2x_2$ subject to the constraints: $x_1 \geq 0$, $x_2 \geq 0$,

$$3x_1 + 4x_2 \leq 60, \quad 4x_1 + 2x_2 \leq 60, \quad 10x_1 + 2x_2 \leq 120.$$