Computer Methods in Operations Research - I

Homework 3 **Due: October 15, 1998 (New date, this is final!)**

1. Resolve the problem (2.1) on P. 13 of the text using the Revised simplex method. Interpret economically each step (cf. PP 102-105), given that the problem corresponds to the following manufacturing problem: x_1, x_2, x_3, are the quantities of gourmet, regular and diet cookies to produce. The three constraints correspond to the requirements for sugar, flour and butter respectively.

2. Suppose the revised simplex method terminates in step 2 (see P. 103, Box 7.1) with each each component of
(a) ya strictly **more than** than each component of c_N, and
(b) with each basic variable strictly positive.

(i) Prove that the current basic solution is the **unique** optimum solution.
(ii) Give an example of an LP terminating with multiple optimum solutions, where (a) holds but (b) does not.
(iii) Give an example of an LP terminating with multiple optimum solutions, where (b) holds but (a) does not.
(iv) Give a geometric and/or economic interpretation of the difference between the situations in (ii) and (iii) for a problem of your choice.