King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
STAT-361 Operations Research I [1]
HomeWork 1
Two Questions due March 1^{st}, 2015 [2]

Exercice 1

Given the following linear program:

$$\begin{array}{ll} \min\limits_{x_1,x_2} & 2x_1 + 5x_2 \\ \text{s.t} & 4x_1 + x_2 \leq 5, \\ & x_1 + 2x_2 \geq 4, \\ & x_1, x_2 \geq 0. \end{array}$$

(a) Solve the linear program graphically.

[1] Dr. Slim Belhaiza (c), February, 2015
[2] This is NOT a team assignment. Make sure that you submit your answers individually using your own words.

(b) Write the standard form corresponding to the linear program.

(c) Solve the linear program using the Simplex method.

Exercice 2

Consider the following linear program:

$$\begin{array}{ll} \max\limits_{x_1,x_2,x_3} & x_1 + 2x_2 + 3x_3 \\ \text{s.t} & x_1 + 2x_2 + 3x_3 \leq 3, \\ & 2x_1 + x_2 + x_3 \leq 4, \\ & 3x_1 + 3x_2 + 2x_3 \leq 5, \\ & x_1, x_2, x_3 \geq 0. \end{array}$$

(a) Write the standard form corresponding to this linear program.

(b) Solve the linear program using the Simplex method (Tableau).

(c) Give the optimal basic feasible solution found.