COSC 480/MATH 482
Homework #2
Fall 2012

Problem 1

You are given the following data for a linear programming problem where the objective is to minimize the cost of conducting two nonnegative activities so as to achieve three benefits that do not fall below their minimum levels.

Benefit	Activity 1 Benefit Contrib.	Activity 2 Benefit Contrib.	Minimum Acceptable Level
1	5	3	60
2	2	2	30
3	7	9	126
Unit Cost	\$60	\$70	

(a) Formulate a linear programming model for this model. As part of this formulation, introduce slack or surplus variables as appropriate to make any inequalities equalities instead.

(b) Use Excel's Solver to solve this model.

Source: Hillier & Lieberman 3.5.4

Problem 2

Consider the following problem:

Maximize: $Z = x_1 + 2x_2$
Subject to:
$x_1 + 3x_2 \leq 8$
$x_1 + x_2 \leq 4$
With:
$x_1, x_2 \geq 0$

(a) Identify all corner-point solutions for this problem.

(b) Use Excel's Solver to solve this model.

Source: Hillier & Lieberman 4.1.5

Problem 2.5
Now the hog and the frog hurry out for a jog, with the cats and the rats and their new running hats. While the goose and the hare and the moose and the bear are doing their best to keep up with the rest.

(a) If the cats and the rats tried on many hats, what price point should the running hats be to prevent them from buying the fedoras?

Also, but not the hippopotamus?

Source: Sandra Boynton, "But Not the Hippopotamus"