BUAN/OPRE 6398.003 Prescriptive Analytics
Homework 2

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Note: 1.   Your homework submission must be typewritten.

              2.   Show only the solutions to the problems and do not copy the problems in the submission.

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1.   Reading 1.

2.   Consider the following linear program:

Maximize $Z =$ $9x - 4y$
subject to: $x + y \leq 8$
                         $x - y \leq 4$
                         $x, y \geq 0$

   (1)   Use a ruler to plot the constraints and indicate the feasible region for the LP on a sheet of graph paper available in the "Miscellaneous Information" folder at the course website.

   (2)   Plot two iso-profit lines to determine the optimal solution and the maximum objective function value.

   [Note: Be sure to show your complete work similar to Parts (1) and (2) in the solutions to Examples 2.3 and 2.4. The graph paper should be included at the end of your homework submission.]

3.   Consider the following linear program:

Minimize $Z =$ $5u + 2v$
subject to: $u \geq 3$
                         $u + 2v \leq 15$
                         $u, v \geq 0$

   (1)   Use a ruler to plot the constraints and indicate the feasible region for the LP on the graph paper available in the "Miscellaneous Information" folder at the course website.

   (2)   Use the corner-point method to find the optimal solution and the minimum objective function value.

   [Note: Be sure to show your complete work similar to Parts (1) and (3) in the solutions to Examples 2.3 and 2.4. The graph paper should be included at the end of your homework submission.]

4.   Use the simplex method to solve the following linear program: (5.5 pts.)

Maximize $Z =$ $4x + 5y$
subject to: $3x + 6y \leq 21$
                         $4x + 3y \leq 18$
                         $x, y \geq 0$

   (Note: Be sure to show your complete work similar to the solutions to Examples 2.5.)

5.   Please refer to Case Study 1 to be posted online later.