ASSIGNMENT 4  CHE 5480

DUE: March 29: Send through e-mail. Include the GAMS and Excel files and a narrative explaining what was done and how.

#Problem 1
Consider the following problem:

Min $(x-3)^2+(y-2.5)^2$

Subject To:
- $x \cdot y \leq 4$
- $0.64X \leq y$
- $0 \leq x \leq 4$
- $0 \leq y \leq 8$

1- Show the image region $\{f(x,y) \text{ vs } \max \{g_1(x,y)\} \}$. In Bazaraa you have only one $g$. Here you have more than one. Then your region includes the maximum of all the constraint values.

2- Solve using GBD v1 and v2. Show all the optimization problems generated and all the solutions.

#Problem 2
Consider the following problem:

$$
\begin{align*}
\min & \quad 7.5y_1 + 5.5y_2 + 7v_1 + 6v_2 + 5x \\
\text{s.t.} & \quad z_1 = 0.9[1 - \exp(-0.5v_1)]v_1 \\
& \quad z_2 = 0.8[1 - \exp(-0.4v_2)]v_2 \\
& \quad z_1 + z_2 - v = 0 \\
& \quad z_1 + z_2 = 10 \\
& \quad v_1 \leq 10y_1 \\
& \quad v_2 \leq 10y_2 \\
& \quad x_1 \leq 20y_1 \\
& \quad x_2 \leq 20y_2 \\
& \quad y_1 + y_2 = 1 \\
& \quad z_1, z_2, z_1, z_2, v_1, v_2 \geq 0 \\
& \quad y_1, y_2 \in \{0, 1\}^2
\end{align*}
$$

1- Solve using GBD v1 and v2. Show all the problems generated and all the solutions. Is the solution global? Why?

2- Solve using OR. Show all the problems generated and all the solutions. Is the solution global? Why?

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