Linear Programming (PROL)[1]

Final Exam

Duration of the exam : 1h30
No documents are allowed
Only ***non-programmable*** pocket calculators are allowed.

Let (P) be the following linear program:

$$\begin{array}{ll} \text{maximize} & z = x_1 + 5x_2 + 3x_3 \\ \text{subject to} & \\ & x_1 + 3x_2 + 8x_3 \leq 2 \\ & x_1 + 6x_2 + 2x_3 \geq 8 \\ \text{with} & x_1,\, x_2,\, x_3 \geq 0 \end{array}$$

1. Solve the linear program (P) using the simplex algorithm in its tableau form.
2. Write down the dual linear program (D) of (P).
3. Using answer to question (1.) write down an optimal tableau of D.
4. Using the simplex algorithm solve the linear program (D) starting at its expression given by the answer to question (2.).
5. Compare results of questions (3.) and (4.). Are both obtained optimal tableaux of (D) identical?

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