



Indian Institute of Technology Ropar
Department of Mathematics
MA303: Computing Lab II
2nd semester of academic year 2023-24

Lab Sheet-5
Dual Simplex Method

- Write a code to solve the following problems through the Dual Simplex method.
- Where the input method should be like the following: (Ask from user)
 1. Enter the number of the variables.
 2. Enter the number of the constraints.
 3. Enter the number of “ \leq ” constraints.
 4. Enter the number of “ $=$ ” constraints.
 5. Enter the number of “ \geq ” constraints.
 6. Enter the constraints chronologically.

The output should be like following:

1. Print the initial simplex table.
2. Print all the tables.
3. Print the optimal solution.
4. Test your code on the following example.

$$\begin{aligned} \text{Minimize } Z &= -2x_1 - x_3 \\ \text{subject to } x_1 + x_2 - x_3 &\geq 5 \\ x_1 - 2x_2 + 4x_3 &\leq 8 \\ x_1, x_2, x_3 &\geq 0 \end{aligned}$$

Ans: $x_1 = 0, x_2 = 14, x_3 = 9$ and $Z_{min} = -9$

***** END *****