

Class 6 (17-02-2021)

Make a menu driven program using Two Phase Simplex/ Dual Simplex with the following options (a) initial table (b) List of basic & non-basic variables for i^{th} iteration (c) table of i^{th} iteration (f) optimal solution (if exists otherwise generate report for infeasibility, unboundedness, alternative optimum etc.)

1. Minimize $Z = 20x_1 + 16x_2$, Subject to $x_1 \geq 2.5, x_2 \geq 6, 2x_1 + x_2 \geq 17, x_1 + x_2 \geq 12, x_1, x_2 \geq 0$.
2. Minimize $Z = 4x_1 + 8x_2 + 3x_3$, Subject to $x_1 + x_2 \geq 2, 2x_1 + x_3 \leq 5, x_1, x_2, x_3 \geq 0$.
3. Maximize $Z = 15x_1 + 6x_2 + 9x_3 + 2x_4$, Subject to $10x_1 + 5x_2 + 25x_3 + 3x_4 \leq 50, 12x_1 + 4x_2 + 12x_3 + x_4 \leq 48, 7x_1 + x_4 \leq 35, x_1, x_2, x_3, x_4 \geq 0$.
4. Maximize $Z = 5x_1 - 2x_2 + 3x_3$, Subject to $2x_1 + 2x_2 - x_3 \geq 2, 3x_1 - 4x_2 \leq 3, x_2 + 3x_3 \leq 3, x_1, x_2, x_3 \geq 0$.
5. Max $z = 2x_1 + 3x_2 + x_3$, Subject to $x_1 + x_2 + x_3 \leq 40, 2x_1 + x_2 - x_3 \geq 10, -x_2 + x_3 \geq 10; x_1, x_2, x_3 \geq 0$
6. Max $Z = 5x_1 + 8x_2$, Subject to $3x_1 + 2x_2 \geq 3, x_1 + 4x_2 \geq 4, x_1 + x_2 \leq 5; x_1 \geq 0, x_2 \geq 0$