

1. Consider the LP

$$\begin{aligned} \min z &= x_1 + x_2 \\ \text{s.t.} \quad 2x_1 - x_2 &\geq 6 \\ x_1 + 3x_2 &\leq 10 \\ x_1 - x_2 &\geq \frac{3}{2} \\ x_1, x_2 &\geq 0 \end{aligned}$$

Solve the dual problem and, with the Complementary slackness Theorem, obtain the solution for the primal problem.

2. Use dual Simplex method to solve:

$$\begin{aligned} \min z &= 5x_1 + 2x_2 + 8x_3 \\ \text{s.t.} \quad 2x_1 - 3x_2 + 2x_3 &\geq 3 \\ -x_1 + x_2 + x_3 &\geq 5 \\ x_1, x_2, x_3 &\geq 0 \end{aligned}$$

* from Linear and Non-Linear Programming by S.G.Nash and A.Sofer