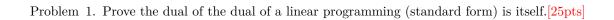
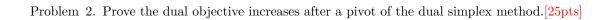
Numerical Optimization, 2023 Fall Homework 3

Name: Zhou Shouchen Student ID: 2021533042

Due 23:59 (CST), Nov. 16, 2023





Problem 3. Let $L(x, \lambda)$ be the Lagrangian of a linear programming problem, and (x^*, λ^*) be the optimal primal-dual solution. Prove that

$$L(\boldsymbol{x}, \boldsymbol{\lambda}^*) \ge L(\boldsymbol{x}^*, \boldsymbol{\lambda}^*) \ge L(\boldsymbol{x}^*, \boldsymbol{\lambda}),$$

for any primal feasible \boldsymbol{x} and dual feasible $\boldsymbol{\lambda}.[25 \mathrm{pts}]$

