

Convex Optimization

(January – June 2022)

Assignment 3

(Graded)

1. Solve the following problem

$$\min f(x, y) = x^2 - 4x + y^2 - y - xy$$

by Implementing the following methods

- a. Golden section method

Start with this interval $x \in (2.5, 3.5), y \in (1.5, 2.5)$

- b. Fibonacci Search method

Start with this interval $x \in (2.5, 3.5), y \in (1.5, 2.5)$

- c. Nelder–Mead method

Start with three vertices $y_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, y_2 = \begin{pmatrix} 1.2 \\ 0 \end{pmatrix}, y_3 = \begin{pmatrix} 0 \\ 0.8 \end{pmatrix}$

Your program must be able to handle functions of upto 4 variables. Moreover, the programs must be able to show all the intermediate results.

