Name/Surname: Date:

Number: Grade:

EEF311E   **Numerical Analysis with Python, 2ⁿᵈ Homework**   **Autumn 2023**

Write a "Python" program that reads polynomial coefficients from a file (input.txt) and finds the zeros of these functions by using "Bi-Section" method with a relative error of $\varepsilon=10^{-6}$. Your code also determines the interval [a, b] automatically for the "Bi-section method".

Two different 2ⁿᵈ order polynomials will be defined in the "input.txt" file as "y1" and "y2".

$2x^2 -5x+3=0$ #the coefficients of this polynomial are 2, -5, and 3
$2x^2 -5x=0$
The content of "input.txt" will be (_we will test your code by different "input.txt" files_):
y1=2,-5,3
y2=2,-5,0

The content of the "output.txt" file should be:
Given equations:
y1= 2x**2-5x+3
y2= 2x**2-5x
The roots of y1:
Interval: 0.5-1.2
Iteration=17
x1=1
Interval: 1.2-2
Iteration=3
x2=1.5
The roots of y2:
Interval: -1-0.2
Iteration=21
x1=0
Interval: 0.1-3
Iteration=20
x2=2.5

Note 1: Turnitin can be used to check for any cheating. Please submit your own work!
Note 2: The **text** in the output file should be correctly typed. The output file name must also be as given. Not even extra spaces and characters are allowed. In such cases, you may not get any grade.
Note 3: Please write your code by writing functions.
Note 4: Your code should be properly commented on. Uncommented code will get partial credit.
Important: You have to do your assignment alone. Code sharing among students or using code from other sources is prohibited.

Upload your project's Python source files to "EEF311E Homework" field in your Ninova system.