

Ozyegin University | EE393 Python for Engineers

HW; released on 30.11.20; due: 07.12.20

We would like to investigate the real roots of any continuous, one variable functions in a given interval.

Develop a simple python program to do the following tasks:

- Write a function template as follows in a separate Jupyter cell

```
def f(x):  
    .....
```

put a function of your choice as a test function.

In a separate cell:

- identify interval (real numbers!!) where we'll investigate roots. You should get interval as an input from the user
- get a step size or number of points information from the user
- obtain points in the interval using numpy arrange or linspace

In a separate cell:

- plot the function using matplotlib in the identified interval so that user could see if there are roots; so that user is able to modify interval, step size etc. in the previous cell. You are required to format axes, labels, grids, legends, titles, fonts etc. Your graphics should be catchy!

In a separate cell:

- Identify method to find the root (user should select the method a list)
- Identify tolerance by getting input from the user (e.g. 1E-6 for 10^{-6} etc.)
- Program should find all the roots in the interval
- Program should print all the roots in an understandable format
- Program should give a proper message if there are no roots found in the interval
- Program should handle all the errors related to user inputs and root finding. Use exception handling

HW submission

- Submit your .ipynb file on or before the due date
- Put an explanation about your code in a separate cell -typically, first cell
- Name variables wisely. Beautify your code. It should look like a piece of art!