Gliwice, 01-02-2025

Mathematical modelling and computer simulations in theory and practice

Documentation of laboratory task no 10

Title: SECANT METHOD

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Field of studies: Informatics (sem.V)

Project Objective:
Project objective is to visualise secant method..

Description:
Our program will take a function, range to be analysed and allowable error. It will look for such x so y=0 +/- error.

Secan method works by creating line connecting end of the range. In the place where it's crossing the X axis a new beggining or end (depending on signs) of range is created and procedure repeated. We can visualise up to 20 iteration (secants connecting beggining and end of each range). We need to make sure that function solution at the beggining and end of our range have oposites signs. Otherwise method will return error.

Inputs:

1. Function for optimalization (confirm by pressing 'apply'
2. Range begginin ing (as described above).
3. Range end (as described above).
4. Allowable error (as described above).
5. Iterations – number of iterations to be displayed. In order to see this press 'Evaluate' button after entering aforementioned values.

Outputs:
As an output program displays graph with fragment of our function in desired range and lines presenting consequent secants. Value of X is additionaly displayed.

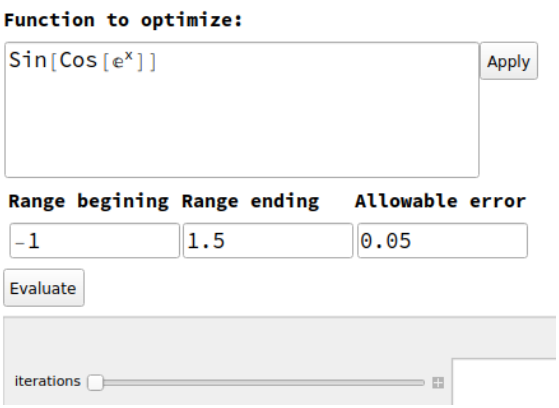

Figure 1: Program inputs.

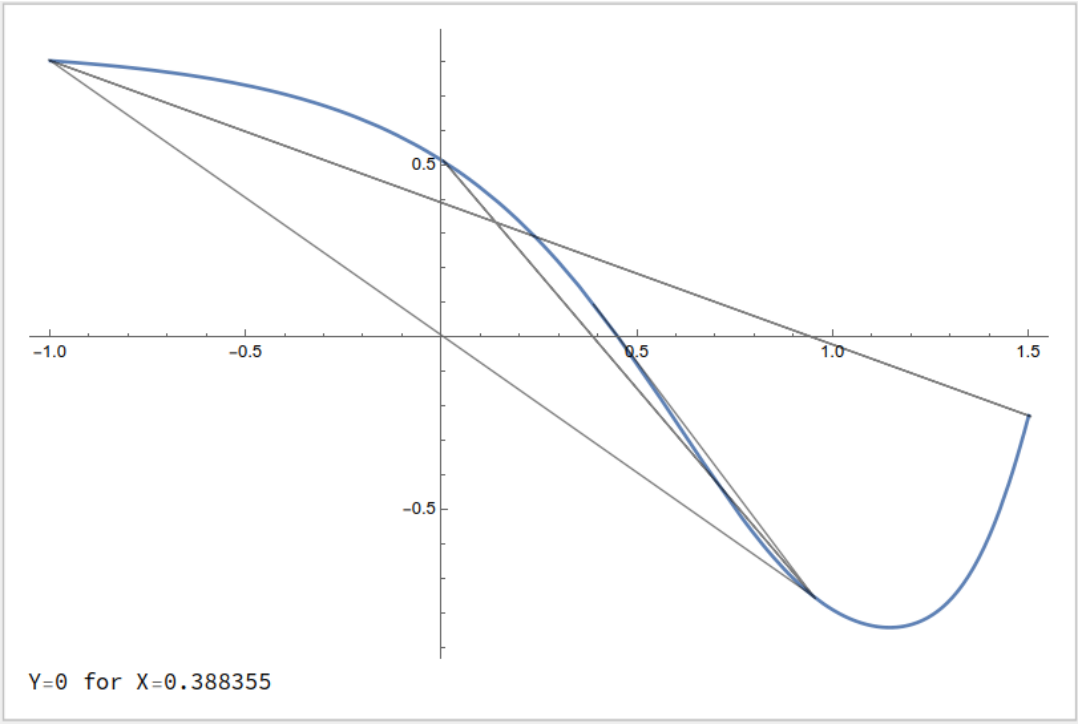

Figure 2: Examplary output.

Enclosures:

❑ File with the program (Jędrzejczyk_Radosław_proj_10)