SET A

CSE2202: Numerical Methods
Online: 1

Name: ID:

Problem Statement: Determine the real root of the equation: $f(x) = 2x^3 + 3x - 1$ using bisection/false position method. Employ initial guesses of $X_{lower} = 0$ and $X_{upper} = 1$ and iterate until the estimated relative error ϵ_a falls below a level of $\epsilon_s = 0.001$

Tasks:

1. Write a program using bisection/false position method to locate the approximate root of the function $(x) = 2x^3 + 3x - 1$ with initial guesses [0, 1].
2. Iterate until the estimated relative error ϵ_a falls below a level of $\epsilon_s = 0.001$
3. Use appropriate math function for your code.
4. Print the following table that show the values of approximate root, absolute error and relative error for each iteration.
   [Hint:
   Absolute Error = $|new\ approximation\ of\ root - previous\ approximation\ of\ root|$
   Relative Error = $\left|\frac{new\ approximation\ of\ root - previous\ approximation\ of\ root}{new\ approximation\ of\ root}\right|$]

Sample Input/ Output:
Enter The Value of: X_{lower} and X_{upper}

Table: Steps of Bisections /False Position Method

No. of Iteration	X_0	Absolute Error	Relative Error

Approximate Root: