

Bisection Method - Questions

1. Use the Bisection Method to solve

$$e^x - 3x = 0$$

on $[0, 1]$.

2. Use the Bisection Method to solve

$$\ln x = x - 2$$

subject to a tolerance of $\varepsilon = 10^{-4}$.

3. Use the Bisection Method to solve

$$e^x - x = 2.$$

4. Consider the equation

$$f(x) \equiv \sin(x^2) = 0.$$

We seek the solution between 1 and 2. How many iterations of the Bisection Method are required to ensure that the error in the solution is bounded above by 10^{-2} ? Note that in this question we are imposing a tolerance on the approximation to the root, not on the value of $|f(x)|$. Use the Bisection Method to find the solution accurate to 10^{-2} .