Lecture Module - Non Linear Equations

ME3001 - Mechanical Engineering Analysis

Mechanical Engineering

Tennessee Technological University

Topic 4 - The Bisection Method

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- Analytical vs. Numerical

- A Bracketing Method: Graphical Explanation

- Algorithm Description

- Programming Exercise

Analytical vs. Numerical

Theoretical/Analytical Solution Techniques
- solving the equation using exact mathematics
- leads to an exact or *analytical* solution

Numerical Solution Techniques
- approximating the solution to the equation using varying methods, or *algorithms*
- leads to a approximate solution
- a.k.a. *Numerical Method*

A Bracketing Method: Graphical Explanation

The Bisection method is a *bracketing method*.

A Bracketing Method: Graphical Explanation

A Bracketing Method: Graphical Explanation

Algorithm Description

1.

2.

3.

4.

Programming Exercise

See MATLAB example.