Numerical Method Topic - Bisection Method

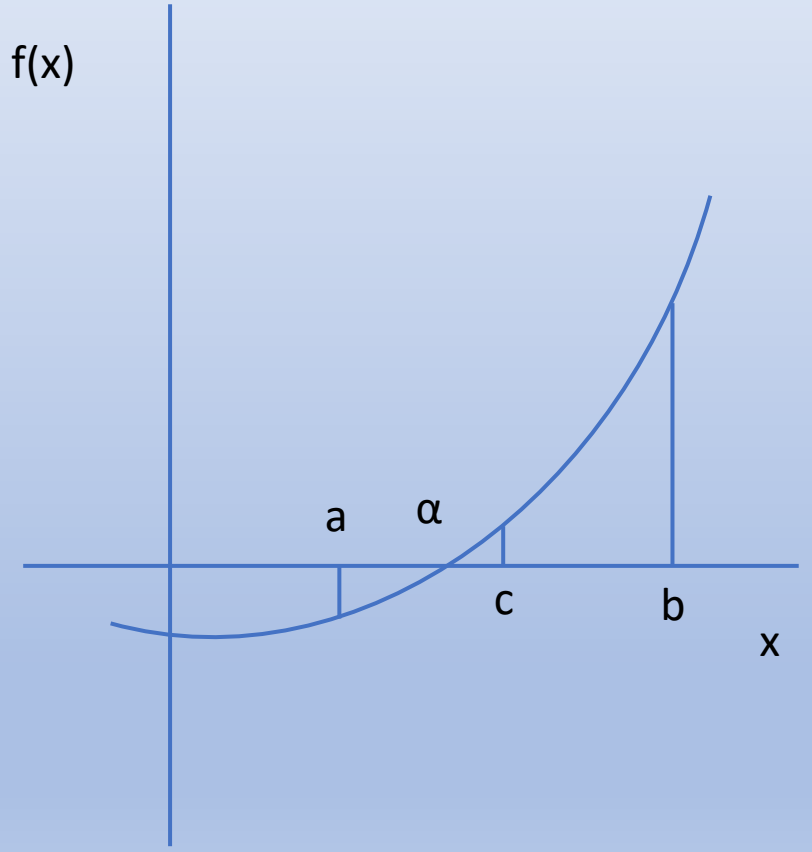
Objectives

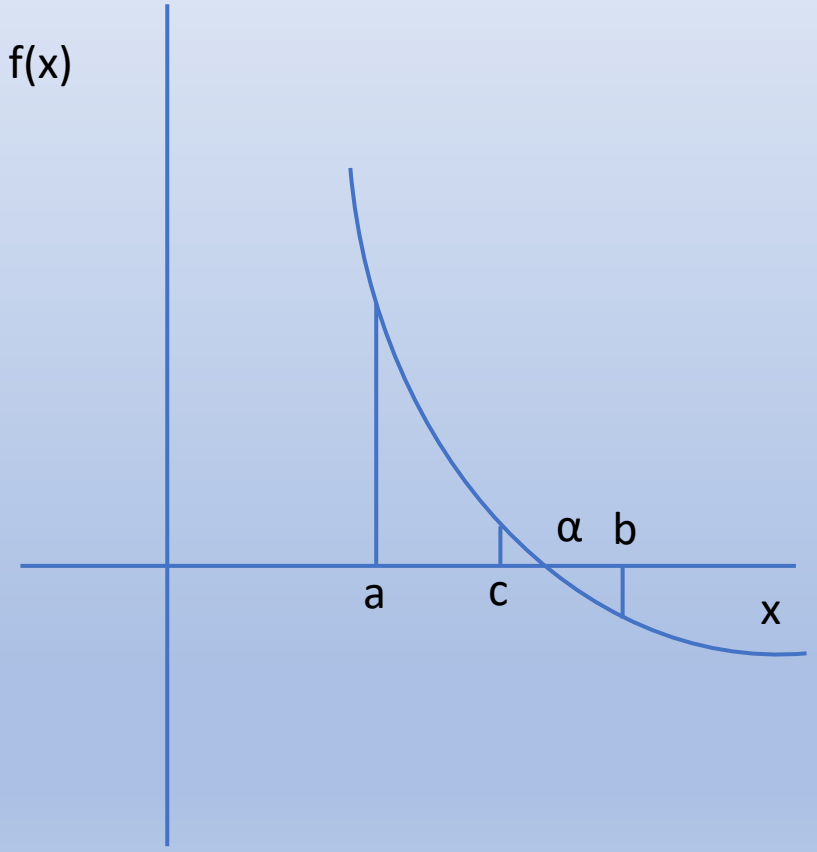
- Solve a nonlinear equation using Bisection Method
- Bisection method belongs to a group called closed domain (or bracketing) methods.
- The nonlinear equation, f (x) = 0, could be an algebraic equation, a transcendental equation etc

- Examples of nonlinear equations:

- f (x) = x^3 - 2*x^2 - 2*x + 1;
- f (x) = exp(x) - 2*x - 2;

Bisection Method





Bisection Method - Algorithm

- $c = \left(\frac{a+b}{2}\right)$
- If $f(a) * f(c) < 0$, $a = a, b = c$
- If $f(a) * f(c) > 0$, $a = c, b = b$
- Iteration stopping criteria
- $|b_i - ai| <= \varepsilon 1$
- $|f(ci)| <= \varepsilon 2$

Summary

In this video,

- We presented Bisection method to solve non-linear equations.
- Bisection method belongs to a group called closed domain / bracketing methods.
- In the next video, we can look at another bracketing method called Regula Falsi Method.