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# Exercise Session – Root Finder

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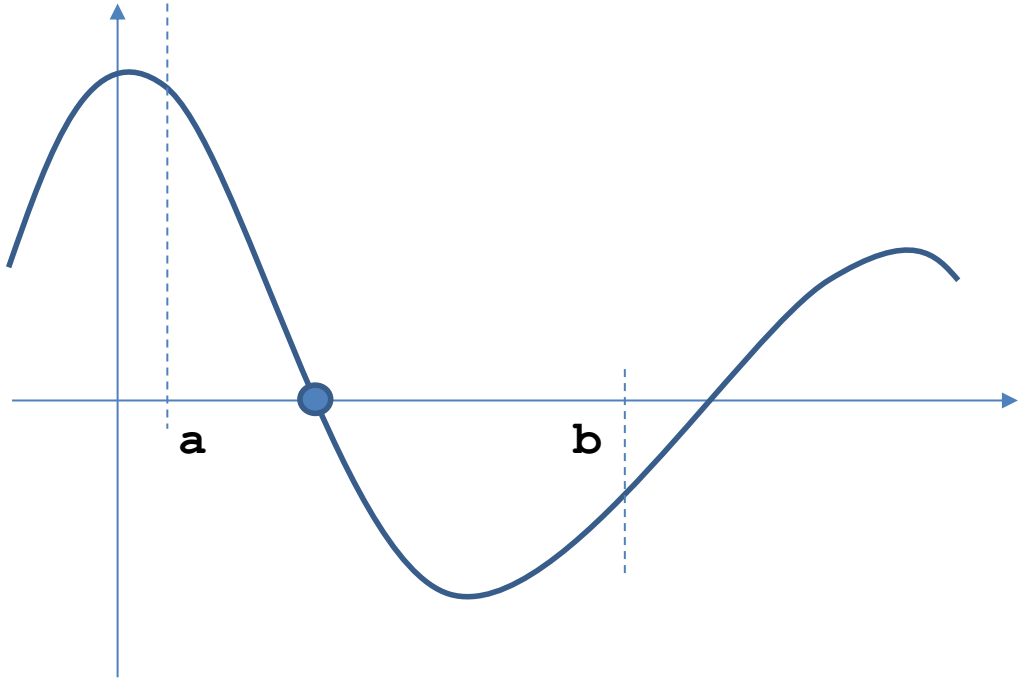
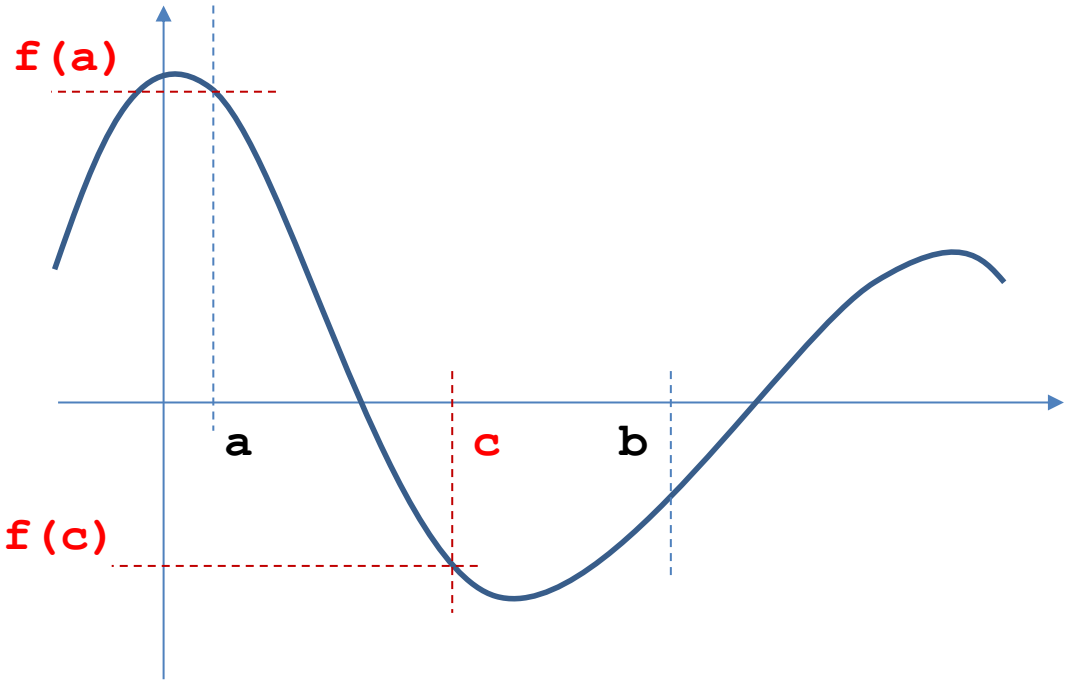
# Goal

- Implement a program that, given a **polynomial function**, determines its **roots** in an interval `[a,b]` through the **Bisection, Newton or Robust method**.



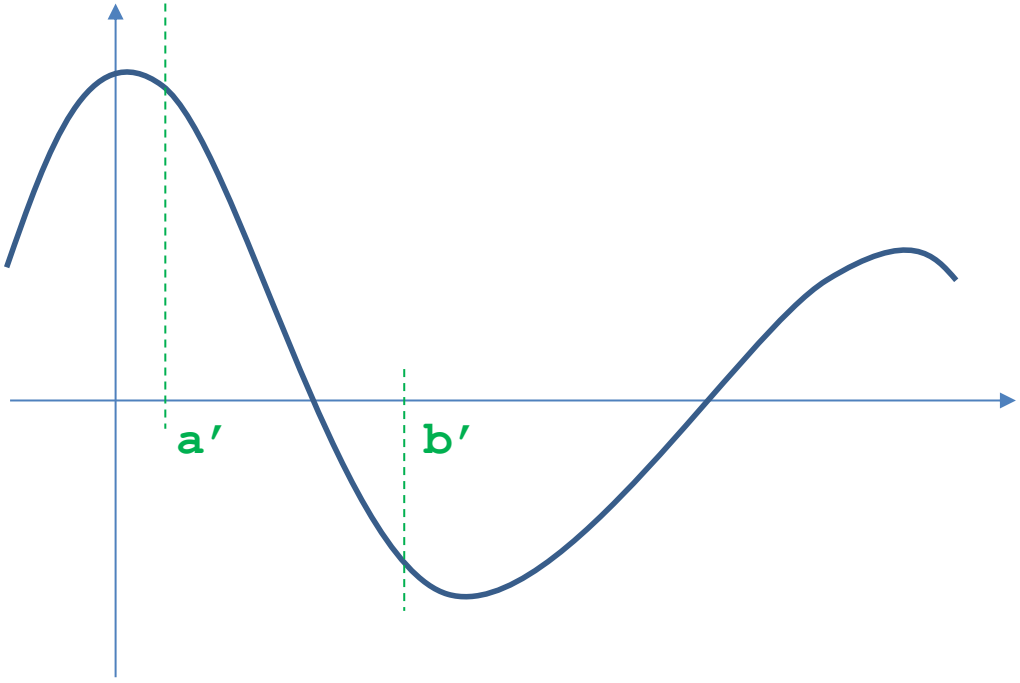
# Bisection method

- Evaluate the function in the left extremum
- Evaluate the function in the interval mid-point



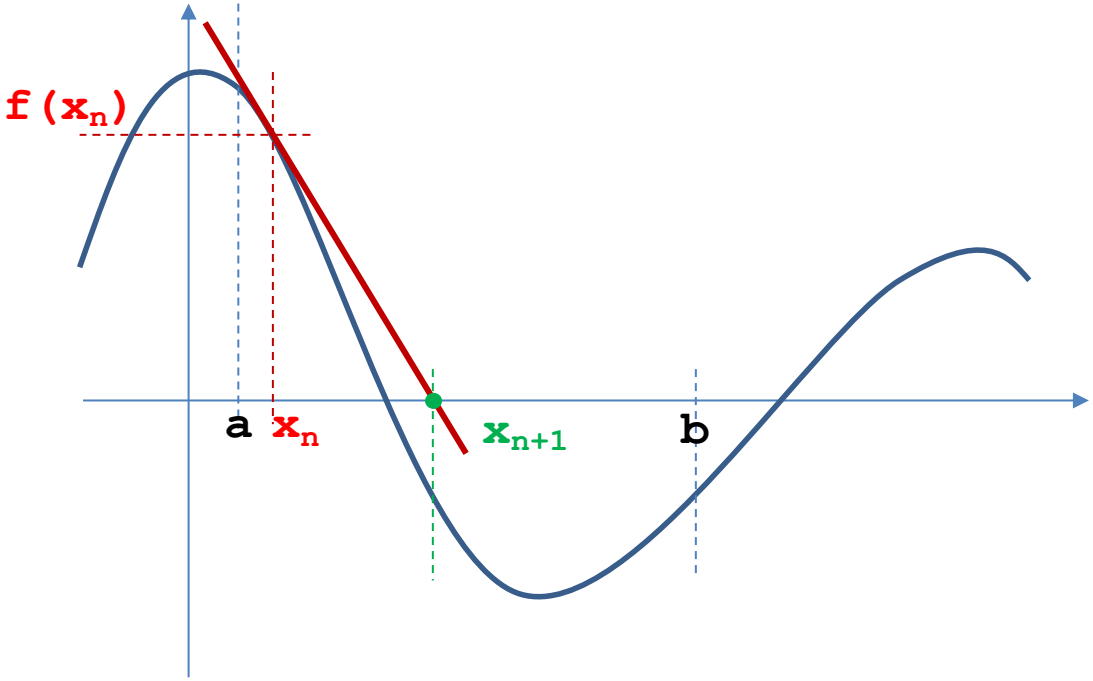
# Bisection method

- Evaluate the function in the left extremum
- Evaluate the function in the interval mid-point
- Determine the new sub-interval to be considered



# Newton Method

- Evaluate the function in a point $x_n$
- Evaluate the function derivative at $x_n$
- Determine the new point $x_{n+1}$



# Robust Method

- Determine an initial guess using the Bisection method with a larger tolerance
- Use the obtained value as starting point for Newton