

Homework#2

Root finding

- Find the root of the following function using the bisection method:
 - $x^3 - 4x - 9 = 0$ in the interval $[2, 3]$
 - $x^3 - 4 = 0$ in the interval $[1, 2]$
- Suppose we used the bisection method on $f(x)$ with an initial interval of $[2, 5]$. How many iterations would it take before the maximum error would be less than 0.01 units?
- Use the bisection method to approximate the value of $\sqrt{71}$ by solving the equations $x^2 - 71 = 0$ in the interval $[8, 9]$. Find the 4th approximation.
- Find a root for the equation $2e^x \sin(x) = 3$ in the interval **[0, 2]** using the false position method and with three iterations.
- Use the false position method to approximate the value of $\sqrt{3}$ start with the interval $[1, 2]$ to find the 3rd approximation.
- Find the root of the following function using the secant method:
 - $x^3 - 4x - 9 = 0$ in the interval $[2, 3]$
 - $x^3 - 4 = 0$ in the interval $[1, 2]$
- Use the Newton's method to approximate the value of $\sqrt{71}$ by solving the equations $x^2 - 71 = 0$ in the interval $[8, 9]$. Find the 4th approximation.
- Find a root for the equation $2e^x \sin(x) = 3$ in the interval $[0, 2]$ using the Newton's method and with three iterations.