Assignment Report

## Question A

Bisection Method   
Required to input function, interval, absolute error of root, maximum iteration   
Input : Bisection(f, a, b, delta , epsilon, M) ; Output : value of root  
  
Newton’s Method   
Required to input function, initial guess, absolute error , maximum iteration   
Input : Newton(f, x0 , delta , epsilon, M) ; Output : value of root  
  
Secant Method   
Required to input function, interval, absolute error of root, maximum iteration

Input : Secant(f, a, b, delta , epsilon, M) ; Output : value of root

# Question B

Test the bisection method.

1. Bisection( , 0 , 2.22e-16 , 2.22e-16 , 50)

Output : 0.860334

1. Bisection( 2.22e-16 , 2.22e-16 , 50)

Output : 0.641186

1. Bisection( , 1 , 3, 2.22e-16 , 2.22e-16 , 50)

Output : 1.82938

1. Bisection( , 0 , 4 2.22e-16 , 2.22e-16 , 50)

Output : 0.117877

# Question C

Test Newton’s Method.

1. Newton( , 4.5 , 2.22e-16 , 10)

Output : 4.49341

1. Newton( , 7.5 , 2.22e-16 , 10)

Output : 7.72525

# Question D

Test Secant Method

1. Secant ( - 1 , 0 , , 2.22e-16 , 2.22e-16 , 10000)

Output : 3.14159

1. Secant (, 1 , 1.4 , 2.22e-16 , 2.22e-16 , 100)

Output : 1.30633

1. Secant (, 1 , 1.4 , 2.22e-16 , 2.22e-16 , 100)

Output : -0.188685

# Question E

– V

Given L = 10 r = 1 V=12.4

When using Bisection Method , output will be 0.164062.

When using Newton’s Method , output will be 0.166155.

When using Secant Method , output will be 0.166164.

# Question F

where

1. Using Bisection Method , output is the approximate value of which 33
2. Using Newton’s Method , output is the approximate value of which 33.1689
3. If the initial guess far away from 33 , we get the different output . The reason is the function does not convergence with this method.