**Assignment-3**

Course: SC-374

Computational and Numerical Methods

Instructor: Prof. Arnab Kumar

Made by:

Yatin Patel – 201601454

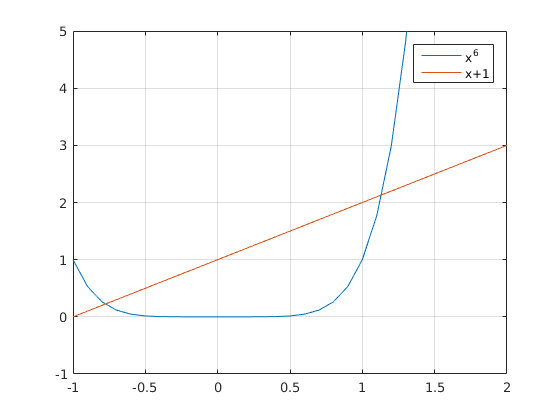
Rutvik Kothari – 201601417

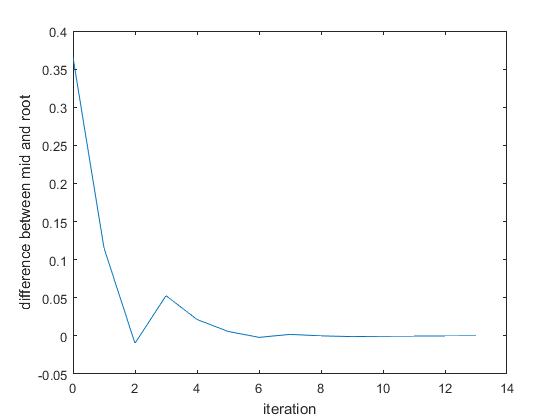
# **Problem: 1**

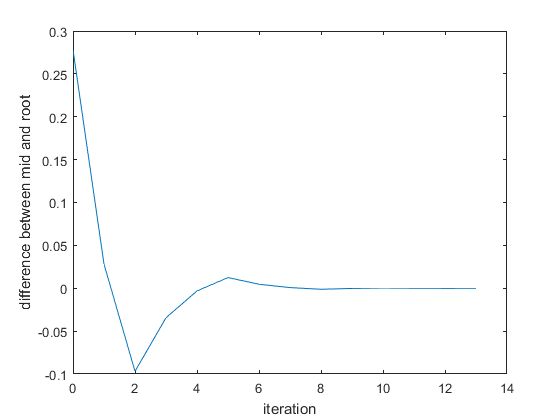
♦ **Statement:**

Write a code, applying the algorithm of the bisection method to determine both the real roots of .

♦ **Graphs:**







♦ **Observations:**

Smallest Root which we are getting is at x = -0.7781 .

Largest Root which we are getting is at x = 1.1347 .

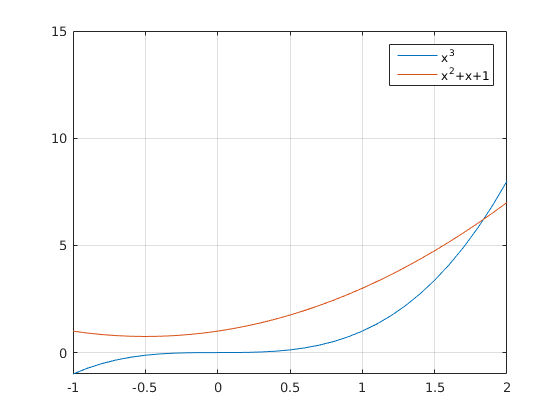
# **Problem: 2**

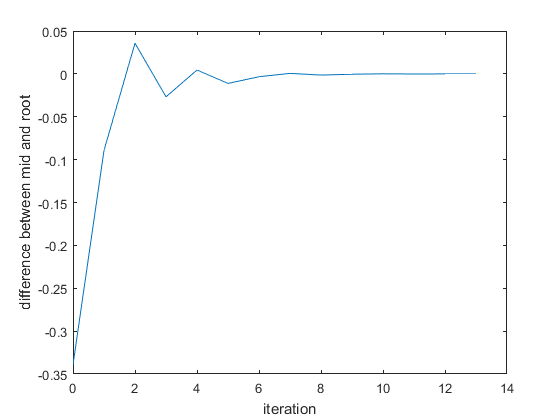
♦ **Statement:**

Use the bisection method to find the real roots of the following functions, using an error tolerance of € = 0.0001.

**(A)**

♦ **Graphs:**



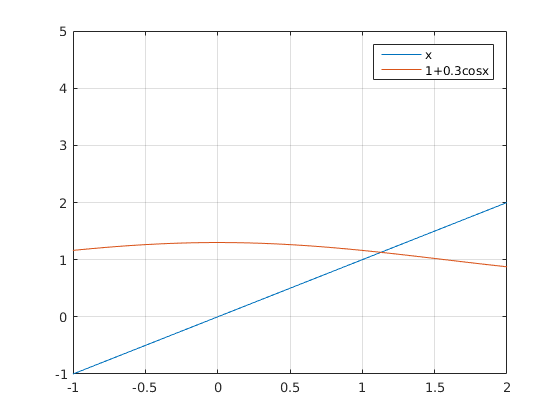


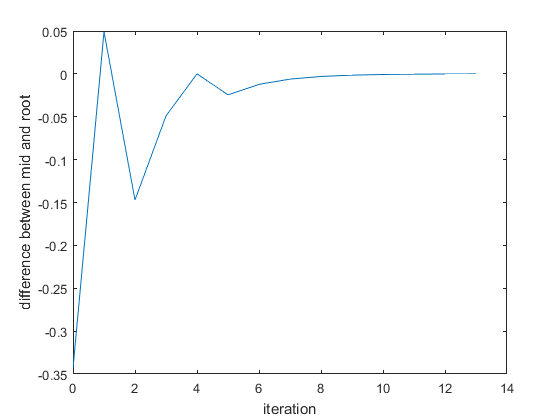
♦ **Observations:**

Root which we are getting is at x = 1.8393 .

**(B)**

♦ **Graphs:**



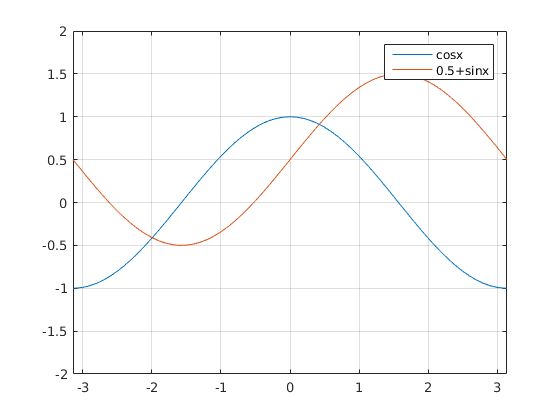


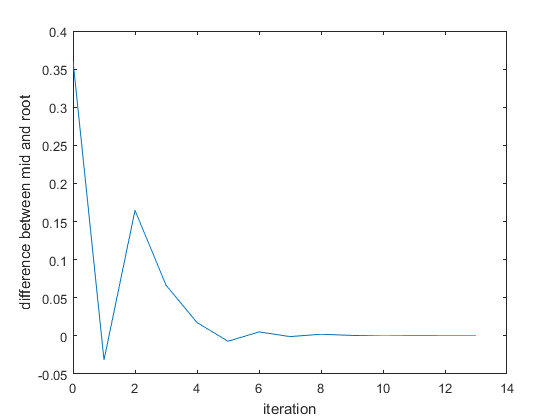
♦ **Observations:**

Root which we are getting is at x = 1.1284 .

**(C)**

♦ **Graphs:**



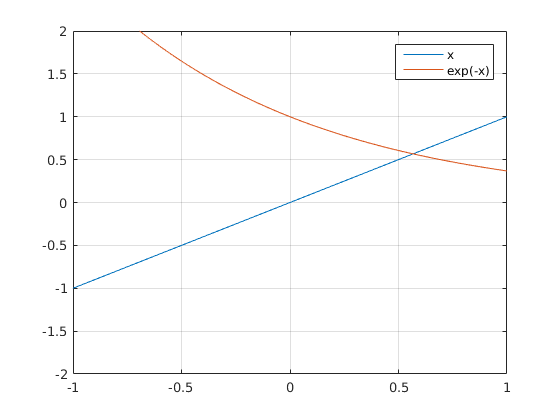


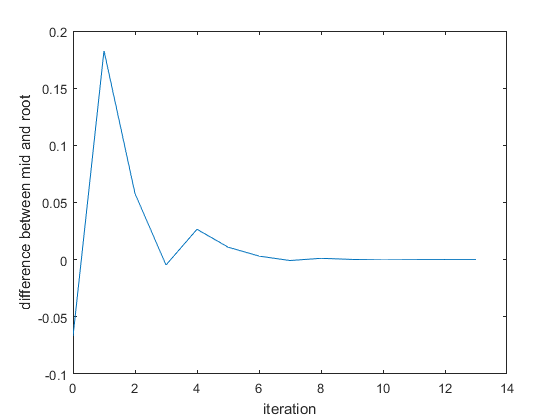
♦ **Observations:**

Root which we are getting is at x = 0.4241 .

**(D)**

♦ **Graphs:**



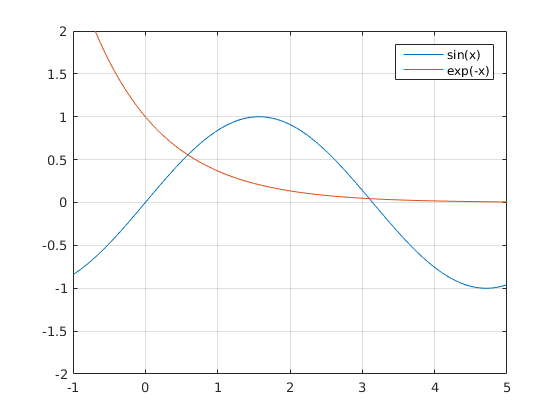


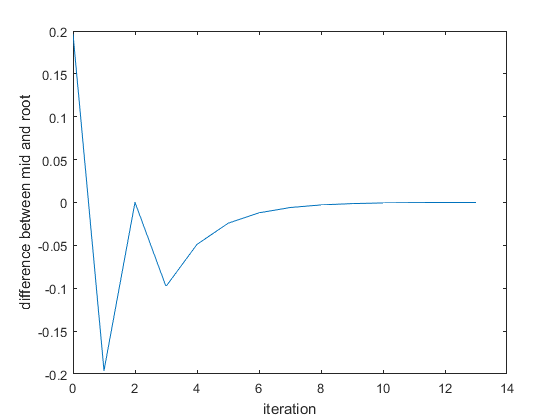
♦ **Observations:**

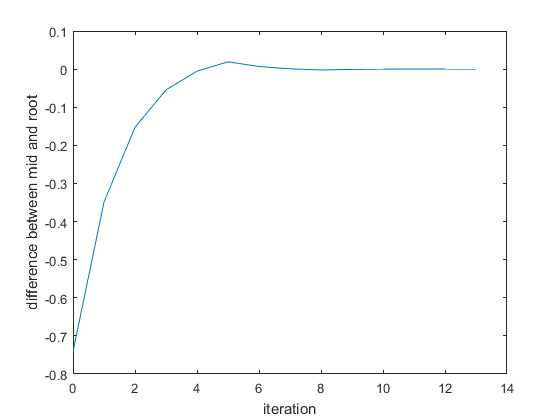
Root which we are getting is at x = 0.5672 .

**(E)**

♦ **Graphs:**







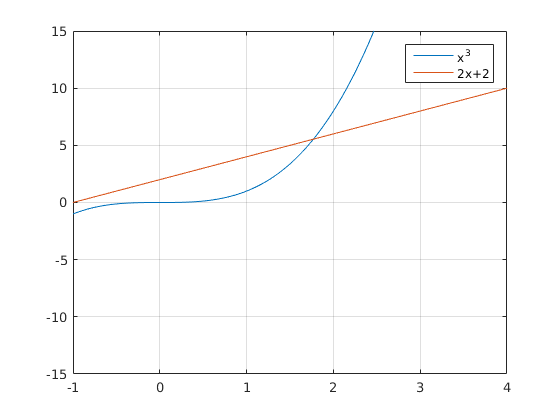
♦ **Observations:**

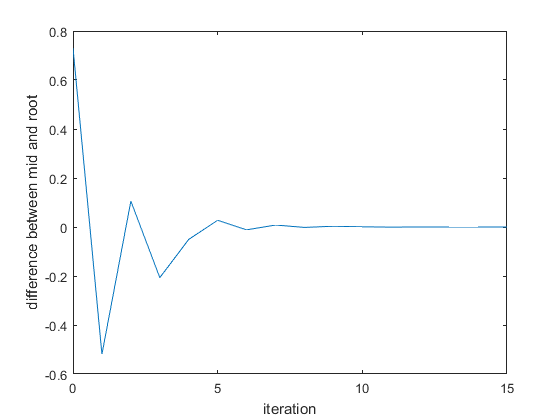
Root which we are getting is at x = 0.5885 .

Root which we are getting is at x = 3.0964 .

**(F)**

♦ **Graphs:**



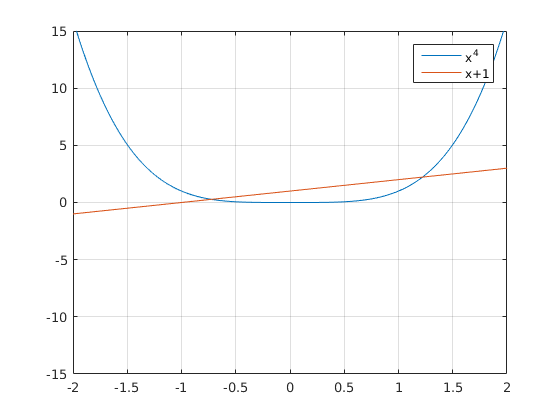


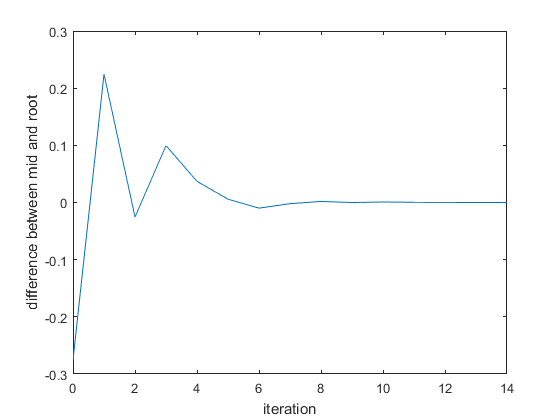
♦ **Observations:**

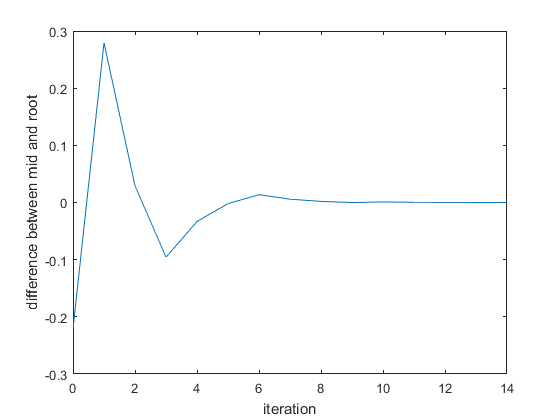
Root which we are getting is at x = 1.7693 .

**(G)**

♦ **Graphs:**







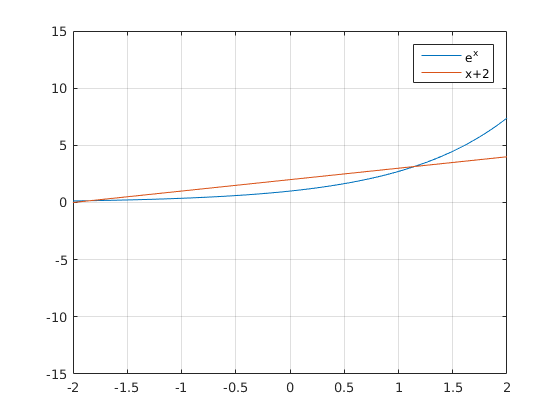
♦ **Observations:**

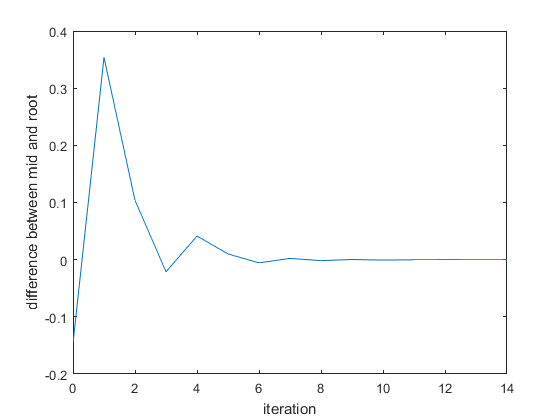
Smallest Root which we are getting is at x = -0.7245 .

Largest Root which we are getting is at x = 1.2207 .

**(H)**

♦ **Graphs:**

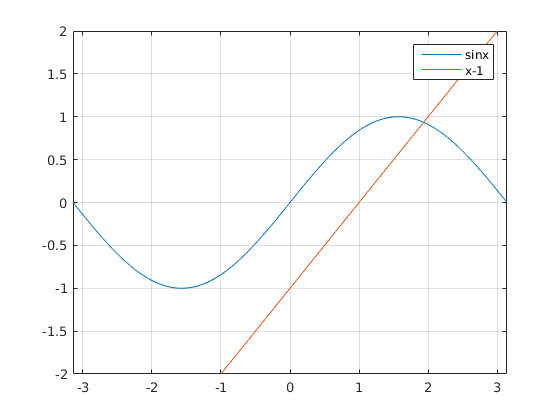


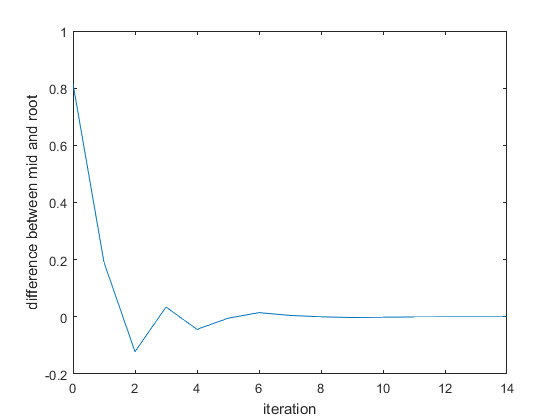


♦ **Observations:**

Root which we are getting is at x = 1.1462 .

♦ **Graphs:**



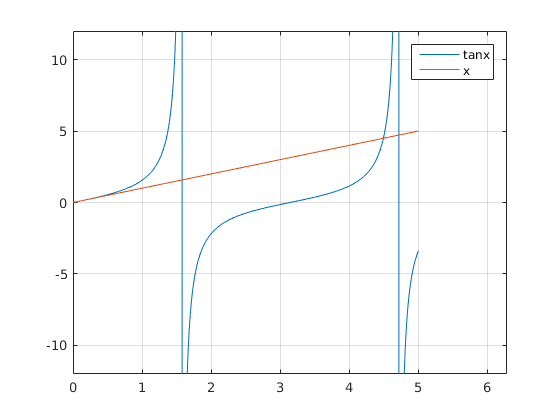


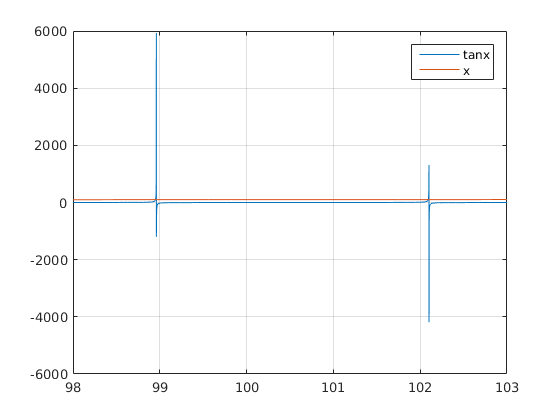
♦ **Observations:**

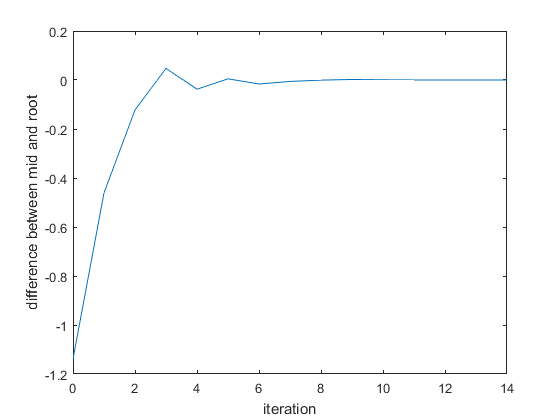
Root which we are getting is at x = 1.9345 .

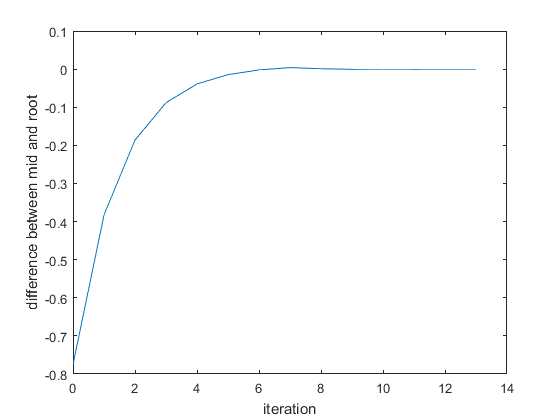
**(J)**

♦ **Graphs:**









♦ **Observations:**

Smallest non-zero positive Root which we are getting is at x = 4.4934 .

Root closest to x = 100 , which we are getting is at x = 98.9501 .