

MA322 : SCIENTIFIC COMPUTING

LAB ASSIGNMENT 2

Name : Nayanika Ghosh

Roll : 200123036

Q.3) The root for the given equation has been calculated as 0.824 approximately.

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Type "Bisection", "Newton", "Secant" for the required method
Newton
Give the input for the function f(x)
pow(x,2)-cos(x)
Give the input for the function f(x)
2*x+sin(x)
Give the input for the starting point
1.1
Give the input for the maximum number of steps
1000000
Give the input for the required precision
0.00001
0.824132
```

Q.5) It should be mentioned that the new method converges with an order of convergence of 2 (approximately).

When m is changed to 3, the order of convergence approaches 1, which is the same as those for the Secant method and Newton's method. But the common denominator in each case is around 1.

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When x = 2, the roots are :-  
Newton's Method :          1.000000054512  
Secant Method :           1.000000115687  
The New Method :          1.000000006010  
When m = 3 :              1.000000031499  
Order of Convergence :-  
Secant Method :           1.021088601437  
Newton's Method :         1.008593932928  
The New Method :          1.981216714632  
When m = 3 :-             0.993028410317
```