Bangladesh University of Business and Technology

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Determine the root of the equation using false position method $2e^{x}sinx - 3 = 0$

Course Title : Numerical Analysis Lab
Course Code : CSE 224

SUBMITTED TO:

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Intake : 50th Sec : 01

Submission Date : 06/02/2024

Q:\SEMESTER FOUR\MATLAB\false_position_method.m*

EDITOR PUBLISH VIEW

```
clc
syms x;
y = input('Enter non linear equation: ');
a = input('Enter first guess: ');
b = input('Enter second guess: ');
e = input('Tolerable error: ');
c_plot=[];
fa=eval(subs(y,x,a));
fb=eval(subs(y,x,b));
itt=1;
if fa*fb>0
    disp('No root bracket between a and b');
else
    n = input("Enter number of ittaration you want: ");
  disp('Itr No.    a          b          c          f(a)        f(b)
    while n>=itt
        c=((a*fb)-(b*fa))/(fb-fa);
        fc=eval(subs(y,x,c));
        c_plot= [c_plot c];
        fprintf('%d\t%f\t%f\t%f\t%f\t%f\t%f\n',itt,a,b,c,fa,fb,fc);
        itt=itt+1;
        if fa*fc<0
            b=c;
        else
            a=c;
         end
    end
    disp('The Root is: '); disp(c);
    plot(c_plot, 1:1:n), xlabel('No of ittaration'),
    ylabel('root'), title('False Position Method');
end
```

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Command Window

```
Enter non linear equation: 2*exp(x)*sin(x)-3
Enter first guess: 0
Enter second guess: 3
Tolerable error: 0.001
Enter number of ittaration you want: 8
Itr No.    a          b          c          f(a)        f(b)        f(c)
1   0.000000    3.000000    1.587598    -3.000000    2.668942    6.782585
2   0.000000    1.587598    0.840156    -3.000000    2.668942    0.450751
3   0.000000    0.840156    0.444610    -3.000000    2.668942   -1.658173
4   0.444610    0.840156    0.653932    -3.000000    2.668942   -0.660324
5   0.653932    0.840156    0.752481    -3.000000    2.668942   -0.099073
6   0.752481    0.840156    0.798879    -3.000000    2.668942    0.185956
7   0.752481    0.798879    0.777035    -3.000000    2.668942    0.050101
8   0.752481    0.777035    0.765475    -3.000000    2.668942   -0.020596
The Root is:
    0.7655
```

Figure 1

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