**Q2)**

clc

clear all

close all

y = input('Enter the Function');

a = input('Enter the Value of a:');

b = input('Enter the Value of b:');

e = input('Enter the error:');

i = 0;

fa = feval(y,a);

fb = feval(y,b);

if fa\*fb > 0

disp('No Roots');

else

c = (a+b)/2;

fc = feval(y,c);

fprintf('\n\na\t\t\tb\t\t\tc\t\t\tf(c)\n');

while abs(fc) > e

fprintf('%f\t%f\t%f\t%f\n',a,b,c,fc);

if fa\*fc < 0

b=c;

else

a=c;

end

c = (a+b)/2;

fc = feval(y,c);

i = i + 1;

end

fprintf('Root is: %f\n',c);

fprintf('Number of Iteration:%f',i)

end

Output:

Enter the Function @(x) x^3 - x^2 +2

Enter the Value of a:-200

Enter the Value of b:300

Enter the error:0.01

a b c f(c)

-200.000000 300.000000 50.000000 122502.000000

-200.000000 50.000000 -75.000000 -427498.000000

-75.000000 50.000000 -12.500000 -2107.375000

-12.500000 50.000000 18.750000 6242.234375

-12.500000 18.750000 3.125000 22.751953

-12.500000 3.125000 -4.687500 -122.969482

-4.687500 3.125000 -0.781250 0.912811

-4.687500 -0.781250 -2.734375 -25.921200

-2.734375 -0.781250 -1.757813 -6.521378

-1.757813 -0.781250 -1.269531 -1.657825

-1.269531 -0.781250 -1.025391 -0.129548

-1.025391 -0.781250 -0.903320 0.446914

-1.025391 -0.903320 -0.964355 0.173186

-1.025391 -0.964355 -0.994873 0.025530

-1.025391 -0.994873 -1.010132 -0.051071

-1.010132 -0.994873 -1.002502 -0.012537

Root is: -0.998688

Number of Iteration:16.000000>>

Q1)

Output:

Enter the Function@(x) x^3 - x - 1

Enter the Value of a:1

Enter the Value of b:2

Enter the error:0.001

a b c f(c)

1.000000 2.000000 1.500000 0.875000

1.000000 1.500000 1.250000 -0.296875

1.250000 1.500000 1.375000 0.224609

1.250000 1.375000 1.312500 -0.051514

1.312500 1.375000 1.343750 0.082611

1.312500 1.343750 1.328125 0.014576

1.312500 1.328125 1.320313 -0.018711

1.320313 1.328125 1.324219 -0.002128

1.324219 1.328125 1.326172 0.006209

1.324219 1.326172 1.325195 0.002037

Root is: 1.324707

Number of Iteration:10.000000>>

Q3)

Enter the Function @(x) cos(x) - x\*exp(x)

Enter the Value of a:0

Enter the Value of b:1

Enter the error:0.00001

a b c f(c)

0.000000 1.000000 0.500000 0.053222

0.500000 1.000000 0.750000 -0.856061

0.500000 0.750000 0.625000 -0.356691

0.500000 0.625000 0.562500 -0.141294

0.500000 0.562500 0.531250 -0.041512

0.500000 0.531250 0.515625 0.006475

0.515625 0.531250 0.523438 -0.017362

0.515625 0.523438 0.519531 -0.005404

0.515625 0.519531 0.517578 0.000545

0.517578 0.519531 0.518555 -0.002427

0.517578 0.518555 0.518066 -0.000940

0.517578 0.518066 0.517822 -0.000197

0.517578 0.517822 0.517700 0.000174

0.517700 0.517822 0.517761 -0.000012

0.517700 0.517761 0.517731 0.000081

0.517731 0.517761 0.517746 0.000035

0.517746 0.517761 0.517754 0.000011

Root is: 0.517757

Number of Iteration:17.000000>>