%% Bisection Method

str = input('Give an equation in x: ','s');

func = str2func( ['@(x)', str ]);

a=input('Enter lower limit ');

b=input('Enter upper limit ');

n=0;

e=0.0001;

err=0;

if func(a)\*func(b)>0

disp('wrong Inputs')

else

c = (a + b)/2;

C= func(c);

while e<abs(C)

if func(a)\*func(c) < 0

b = c;

else

a = c;

end

c = (a + b)/2;

C = func(c);

n=n+1;

end

fprintf('The root by bisection method is %.4f \n',c);

end

%% Regula Falsi Method

str = input('Give an equation in x: ','s');

f = str2func( ['@(x)', str ]);

a=input('Enter lower limit ');

b=input('Enter upper limit ');

c=0;

e=0.0001;

n=0;

if f(a)\*f(b)>0

disp('Please Give Valid Values')

else

x2=b-((b-a)/(f(b)-f(a)))\*f(b);

r=x2;

c=f(x2);

while e < abs(c)

if f(b)\*f(x2)<0

b=x2;

else

a=x2;

end

x2=b-((b-a)/(f(b)-f(a)))\*f(b);

r=x2;

c=f(x2);

n=n+1;

end

fprintf('\n Root of Equation by Regula Falsi Method is %.4f \n ',r);

fprintf('The number of iterations are %d \n',n);

end

%% Secant Method

str = input('Give an equation in x: ','s');

f = str2func( ['@(x)', str ]);

a=input('Enter lower limit ');

b=input('Enter upper limit ');

c=1;

e=0.0001;

n=0;

while e < abs(c)

x2=b-((b-a)/(f(b)-f(a)))\*f(b);

r=x2;

c=f(x2);

if f(b)\*f(x2)<0

a=b;

b=x2;

else

b=a;

a=x2;

end

n=n+1;

end

fprintf('\n Root of Equation is %.4f \n',r);

fprintf('The number of iterations are %d \n',n);

%% Newton Raphson

str = input('Give an equation in x: ','s');

f = str2func( ['@(x)', str ]); ;

fn= matlabFunction(diff(sym(f)));

x0=input('Please give the First Value ');

c=1;

a=0;

xn=x0;

e=0.0001;

n=0;

while e<c

xn;

xm=(xn-(f(xn) / fn( xn) ));

c= f(xm);

xn=xm;

n=n+1;

end

fprintf('The root by Newton Raphson Method is %.4f \n',xm);

fprintf('The number of iterations is %d \n',n);