Experiment 2

Q3 i

%Newtons method

clear all

clc

syms x

f=@(x) x\*x-17

%df=diff(f,x) %2nd arg is wrt what to diff

%will give 2\*x but it will be expression and not func

dff=diff(f,x) %as an expression

df=inline(dff) %makes it as func

i=1;

N=20;

tol=0.00001;

x0=4.5;

while(i<=N)

x1=x0-(f(x0)/df(x0))

if(abs(x1-x0)<tol)

%disp="Root ";

disp(x1)

break;

else

x0=x1;

end

end

%answer = 4.1231

Q3 ii

%Newtons method

clear all

clc

syms x

f=@(x) exp(-x)\*(x^2+5\*x+2)+1

%df=diff(f,x) %2nd arg is wrt what to diff

%will give 2\*x but it will be expression and not func

dff=diff(f,x) %as an expression

df=inline(dff) %makes it as func

i=1;

N=20;

tol=0.00001;

x0=-1.0;

while(i<=N)

x1=x0-(f(x0)/df(x0))

if(abs(x1-x0)<tol)

%disp="Root ";

disp(x1)

break;

else

x0=x1;

end

end

%answer = -0.5792

Q3 iii

%Newtons method

clear all

clc

syms x

f=@(x) x-2\*sin(x)

%df=diff(f,x) %2nd arg is wrt what to diff

%will give 2\*x but it will be expression and not func

dff=diff(f,x) %as an expression

df=inline(dff) %makes it as func

i=1;

N=20;

tol=0.00001;

n1=1.5;

n2=2.5;

h=1;

for i=n1:h:n2

if(f(i)\*f(i+h)<0)

a=i;

b=i+h;

% break; %if u use this also you are corect

end

end

disp(a)

disp(b)

x0=(a+b)/2;

%x0=-1.0;

while(i<=N)

x1=x0-(f(x0)/df(x0))

if(abs(x1-x0)<tol)

disp(x1)

break;

else

x0=x1;

end

end

%answer = 1.8955

Q4

%Newtons method

clear all

clc

syms t

f=@(t) 9\*exp(-t)\*sin(2\*3.14\*t);

%df=diff(f,x) %2nd arg is wrt what to diff

%will give 2\*x but it will be expression and not func

dff=diff(f,t) %as an expression

df=inline(dff) %makes it as func

i=1;

N=20;

tol=0.00001;

x0=3.5;

while(i<=N)

x1=x0-(f(x0)/df(x0))

if(abs(x1-x0)<tol)

%disp="Root ";

disp(x1)

break;

else

x0=x1;

end

end

% answer = 3.5018