**LAB-1**

**Newton-Raphson Method and Some Applications**

**NEWTON.M**

function [x,y]=Newton(fun,funpr,x1,tol,kmax)

x(1)=x1;

y(1)=feval(fun,x(1));

ypr(1)=feval(funpr,x(1));

for k=2:kmax

x(k)=x(k-1)-y(k-1)/ypr(k-1);

y(k)=feval(fun,x(k));

if abs(x(k)-x(k-1))<tol

disp('Newton method has converged');

break;

end

ypr(k)=feval(funpr,x(k));

iter=k;

end

if(iter>=kmax)

disp('zero not found to desired tolerance');

end

n=length(x);

k=1:n;

out=[k' x' y'];

disp(' step x y')

disp(out)

**ASSIGNMENT.M**

f=inline('12\*x^3+5\*x-40')

df=inline('36\*x.^2+5')

[x, y]=Newton(f,df,1,0.00001,10);

% for plotting the root and the function

plot(x(end),y(end),'r\*')

hold on

x=0:0.01:2;

f=12\*x.^3+5\*x-40;

plot(x,f,'k--')

grid on

xlabel('x-axis')

ylabel('y-axis')

title('Newton-Raphson method')

legend('Root','12\*x^3+5\*x-40')

**OUTPUT:**



