LAB EXPERIMENT - 1

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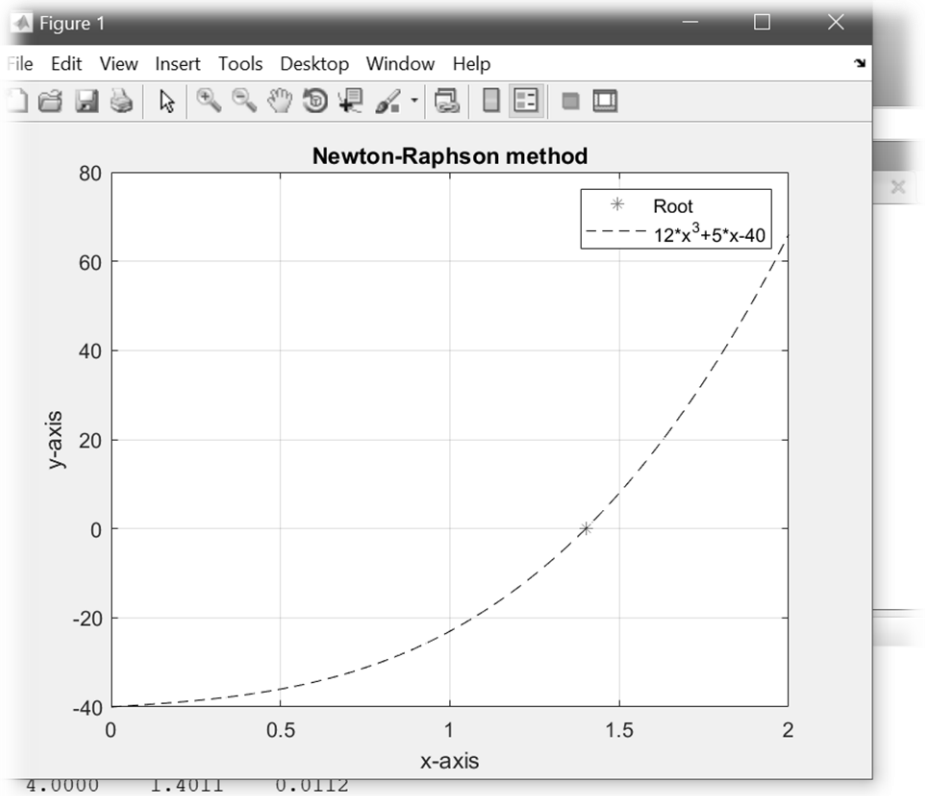
NEWTON RAPHSON METHOD

```
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)
```

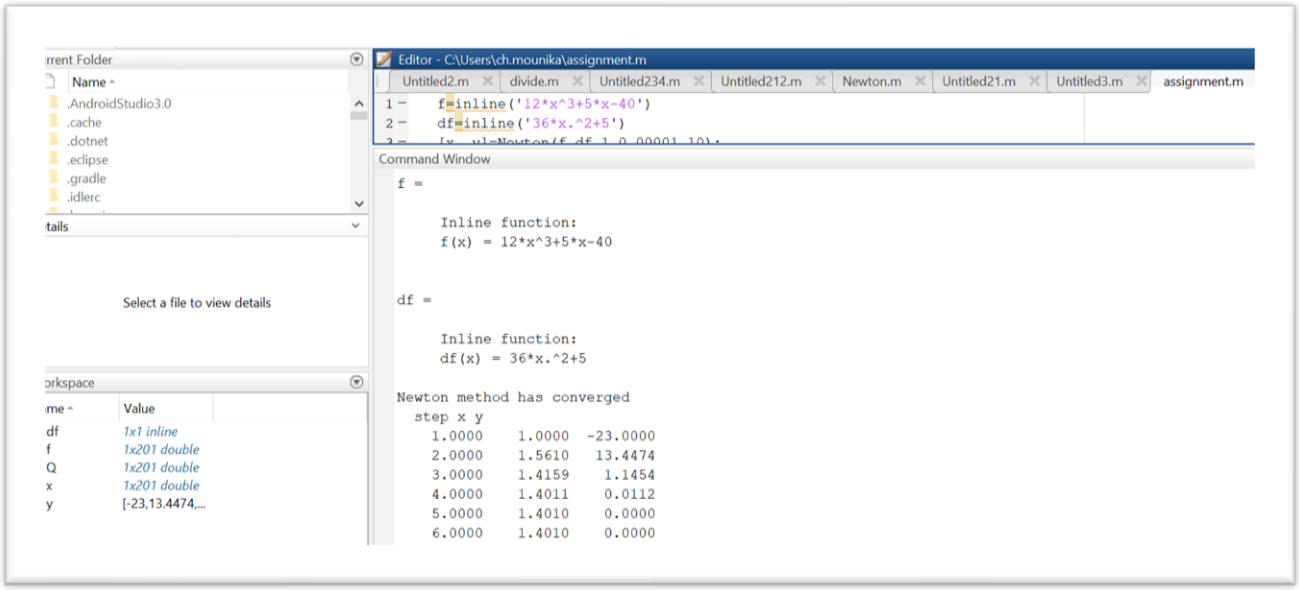
ASSIGNMENT

```
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:



4.0000	1.4011	0.0112
5.0000	1.4010	0.0000
6.0000	1.4010	0.0000


rrent Folder
Name
.AndroidStudio3.0
.cache
.dotnet
.eclipse
.gradle
.idlerc
tails
Select a file to view details
orkspace
me
Value
df 1x1 inline
f 1x201 double
Q 1x201 double
x 1x201 double
y [-23,13.4474,...
Editor - C:\Users\ch.mounika\assignment.m
Untitled2.m
divide.m
Untitled234.m
Untitled212.m
Newton.m
Untitled21.m
Untitled3.m
assignment.m
1 f=inline('12*x^3+5*x-40')
2 df=inline('36*x.^2+5')
Command Window
f =
Inline function:
f(x) = 12*x^3+5*x-40
df =
Inline function:
df(x) = 36*x.^2+5
Newton method has converged
step x y
1.0000 1.0000 -23.0000
2.0000 1.5610 13.4474
3.0000 1.4159 1.1454
4.0000 1.4011 0.0112
5.0000 1.4010 0.0000
6.0000 1.4010 0.0000