

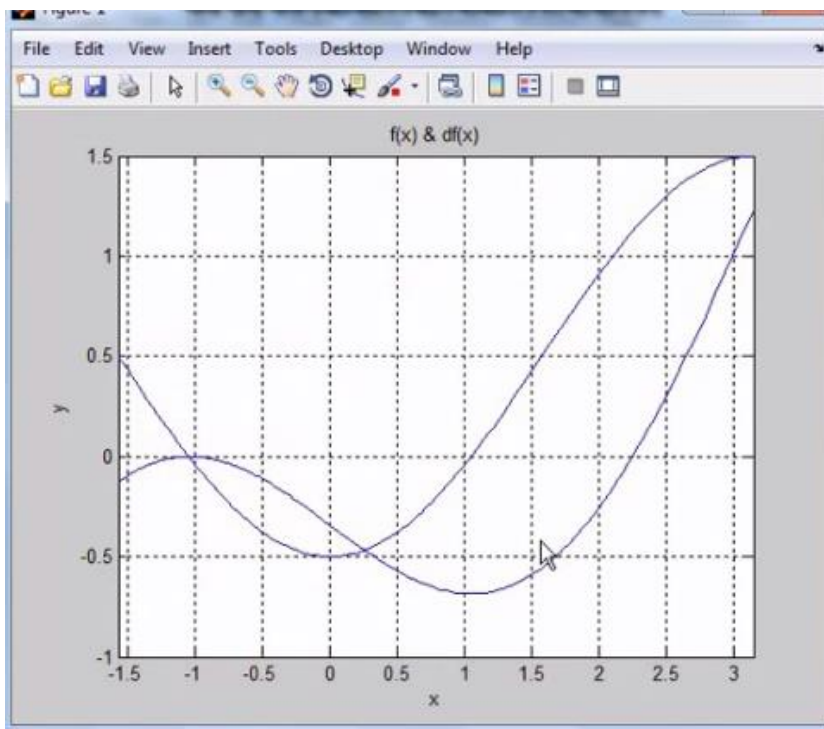
## Solution TP3: Résolution d'équations non linéaire : Méthode de Newton :

Solution :

1/ 2/

```

1- f=@(x) x/2-sin(x)+pi/6-sqrt(3)/2 ;
2- df=@(x) 1/2-cos(x) ;
3
4- fplot(f,[-pi/2 pi])
5- hold on
6- fplot(df,[-pi/2 pi])
7- grid on
8- xlabel('x')
9- ylabel('y')
10- title('f(x) & df(x)')
```



3/

<pre> 1- f =@(x) x/2-sin(x)+pi/6-sqrt(3)/2; %f(x) 2- df=@(x) 1/2-cos(x); %f'(x) 3- ddf=@(x) sin(x); % f''(x)</pre>	<pre> 13 %-----Q2----- 14 %ddf= diff(df) 15 - ddf=@(x) sin(x); 16 - f(pi) *ddf(pi)</pre>
--	--

4/

```
1
2 - f=inline('x/2-sin(x)+pi/6-sqrt(3)/2');%f=@(x)x/2-sin(x)+pi/6-sqrt(3)/2;
3 - df=inline('1/2-cos(x)'); %df=@(x)1/2-cos(x);
4 - x0=input('donner x0 :');
5 - itr=0;itrmax=100;e=1e-10;
6
7 - while itr<itrmax
8 -     x1=x0-f(x0)/df(x0);
9 -     if abs (x1-x0)> e
10 -         x0=x1;
11 -     else
12 -         xsol=x1;
13 -         break
14 -     end
15 - end
16 - fprintf('la solution est x1= %f',xsol)
17     %disp (xsol)
```

Command Window

```
>> tp3fin
donner x0 :3
fx la solution est x1= 2.246006>>
```