

```
code3.m x bisfn.m x +
1      x=1:0.1:100;
2      y=besselj(0,x);
3
4      figure(1)
5      plot(x,y);
6      hold on;
7
8      title('Bessel function','fontsize',14)
9      ylabel(' Y(x)','fontsize',12)
10     xlabel('x ','fontsize',12)
11
12
13
14     f=@(x) besselj(0,x);
15     soln =[];
16
17     a = 0;
18     b = 5;
19     n = 1000;
20     tol = 10^-8;
21     soln =[];
22
23     for k = 1:10000
24         [data,r] = bisfn(f,a,b,n,tol);
25         a = b;
26
27         a = b;
28         b = b+1;
29         while(f(a) * f(b) >=0)
30             b = b+1;
31         end
32         % a = b - 2*0.05;
33         a = b-1;
34
35         soln = [soln,data];
36
37     end
38     w = 1:length(soln);
39     p = polyfit(w,soln,1);
40
41     figure(2)
42     plot(w,soln)
43     title('Roots of the bessel function','fontsize',14)
44     ylabel(' Root','fontsize',12)
45     xlabel('Number ','fontsize',12)
46
47     publish("code3.m","format","pdf")
48
49
```