Experiment No:03

Example 1

```
clc;clear;close;
 n1 = input("Enter RI of core: ");
 n2 = input("Enter RI of cladding: ");
  a = input("Enter radius of core in um: ");
  b = input("Enter radius of fiber in um: ");
  r = 0:0.1:b;
  len = length(r)
  for i = 1:len
    if r(i)<a
   n(i) = n1;
    else
     n(i) = n2;
    end
    end
     plot(r,n)
    xlabel("radial distance in um");
    ylabel("Refractive Index");
   title("V numver vs Wavelength");
    h = gca();
     h.data_bounds = [0,b,n2-0.01,n1+0.01]
```

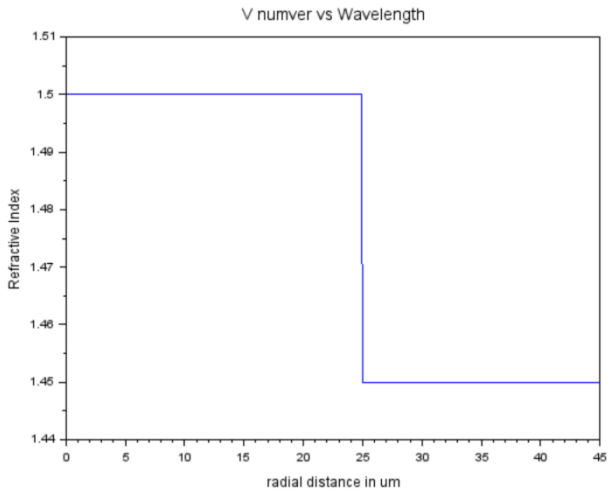
Output:

Enter RI of core: 1.5

Enter RI of cladding: 1.45

Enter radius of core in um: 25

Enter radius of fiber in um: 45



Example 2

```
clc;clear;close;
 n1 = input("Enter RI of core: ");
  a = input("Enter radius of core in um: ");
   b = input("Enter radius of fiber in um: ");
    delta = input("Enter RRID: ");
    alpha = input("Enter four values for profile              paramater in []: ");
   r = 0:0.1:b;
    len = length(r)
     n2 = n1*sqrt(1-2*delta);
```

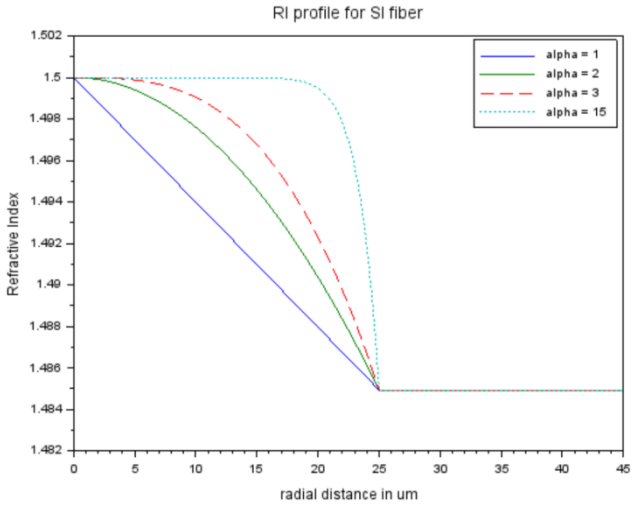
```
        for j= 1:4
          for i = 1:len
         if r(i)<a
         n(j,i) = n1*sqrt(1-2*delta*(r(i)/a)^alpha(j));
         else
           n(j,i) = n1*sqrt(1-2*delta);
       end
    end
end
     plot(r,n(1,:),'-',r,n(2,:),'-',r,n(3,:),'--',r,n(4,:),':');
      legend("alpha = 1","alpha = 2","alpha =         3","alpha = 15");
      xlabel("radial distance in um");
      ylabel("Refractive Index");
       title("RI profile for SI fiber");
        h = gca();
        h.data_bounds = [0,b,n2-0.001,n1+0.001];

   Output:
    Enter RI of core: 1.5
     Enter radius of core in um: 25

     Enter radius of fiber in um: 45

      Enter RRID: 0.01

       Enter four values for profile paramater in []: [1 2 3 15]
```


RI profile for SI fiber
alpha = 1
alpha = 2
alpha = 3
alpha = 15
Refractive Index
radial distance in um
1.502
1.5
1.498
1.496
1.494
1.492
1.49
1.488
1.486
1.484
1.482
0
5
10
15
20
25
30
35
40
45