1. **Program to Implement Trapezoidal Rule.**

```
//implement of trapezoidal rule
#include<iostream.h>
#include<conio.h>
#include<math.h>
#define f(x) (1/(1+pow(x,2)))
void main()
{
        clrscr();
        int i;
        float a,b,n;
        float h,y[100],k,l;
        cout<<"Enter the value of a and b:"<<endl;
        cin>>a>>b;
        cout<<"Enter the value of n:"<<endl;
        cin>>n;
        h=(float)(b-a)/n;
        k=f(a)+f(b);
        for(i=1;i<n;i++)
        {
                l=a+(i*h);
                k=k+(2*f(l));
        }
        k=k*(h/2);
        cout<<"The value of I using trapezoidal rule is:"<<k;
```

```
        getch();
    }
```

2. Program to Implement Simpson's 1/3 Rule.

```
//implement of simphson's 1/3 rule
#include<iostream.h>
#include<conio.h>
#include<math.h>
#define f(x) (1/(1+pow(x,2)))
void main()
{
    clrscr();
    int i;
    float a,b,n;
    float h,y[100],k,l,m,I1=0.0,I2=0.0;
    cout<<"Enter the value of a and b:"<<endl;
    cin>>a>>b;
    cout<<"Enter the value of n:"<<endl;
    cin>>n;
    h=(float)(b-a)/n;
    k=f(a)+f(b);
    for(i=1;i<n;i=i+2)
    {
        l=a+(i*h);
        I1=I1+(4*f(l));
    }
```

```
    for(i=2;i<n;i=i+2)
    {
        m=a+(i*h);
        I2=I2+(2*f(m));
    }
    k=k+I1+I2;
    k=k*(h/3);
    cout<<"The value of I using simphson's 1/3 rule is:"<<k;
    getch();
}
```

3. Program to implement Simpson's 3/8 rule.

```
//implement of simphson's 3/8 rule
#include<iostream.h>
#include<conio.h>
#include<math.h>
#define f(x) (1/(1+pow(x,2)))
void main()
{
    clrscr();
    int i;
    float a,b,n;
    float h,y[100],k,l,m,I1=0.0,I2=0.0;
    cout<<"Enter the value of a and b:"<<endl;
    cin>>a>>b;
    cout<<"Enter the value of n:"<<endl;
```

```
    cin>>n;
    h=(float)(b-a)/n;
    k=f(a)+f(b);
    for(i=1;i<n;i++)
    {
        if(i%3==0){ l=l+i*h; I1=I1+(2*f(l));}
        else { m=m+i*h; I2=I2+(3*f(m));}
    }
    k=k+I1+I2;
    k=k*((3*h)/8);
    cout<<"The value of I using simphson's 3/8 rule is:"<<k;
    getch();
}
```