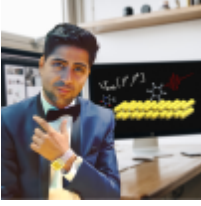


```
//Simpson's 3/8th Rule for Evaluation of Definite Integrals
#include<iostream>
#include<cmath>
using namespace std;
double f(double x) {
    double a=1/(1+x*x);    //write the function whose definite integral is to be
    calculated here
    return a;
}
int main() {
    cout.precision(4);        //set the precision
    cout.setf(ios::fixed);
    int n,i;                  //n is for subintervals and i is for loop
    double a,b,c,h,sum=0,integral;
    cout<<"\nEnter the limits of integration,\n\nInitial limit,a= ";
    cin>>a;
    cout<<"\nFinal limit, b="; //get the limits of integration
    cin>>b;
    cout<<"\nEnter the no. of subintervals(IT SHOULD BE A MULTIPLE OF 3), \nn=";
    //get the no. of subintervals
    cin>>n;
    double x[n+1],y[n+1];
    h=(b-a)/n;    //get the width of the subintervals
    for (i=0;i<n+1;i++){                //loop to evaluate x0,...xn and
    y0,...yn
        x[i]=a+i*h;                    //and store them in arrays
        y[i]=f(x[i]);
    }
    for (i=1;i<n;i++)    {
        if (i%3==0)
            sum=sum+2*y[i];
        else
            sum=sum+3*y[i];
    }
    integral=3*h/8*(y[0]+y[n]+sum); //3h/8*[y0+yn+3*(y1+y2+y4+...)+2*(y3+y6+y9+...)]
    cout<<"\nThe definite integral is "<<integral<<"\n"<<endl;
    return 0;
}
```

```
Enter the limits of integration,
Initial limit,a= 0
Final limit, b=6
Enter the no. of subintervals(IT SHOULD BE A MULTIPLE OF 3),
n=900
The definite integral is 1.4058
```

Explanation of the code:



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I'm a physicist specializing in computational material science with a PhD in Physics from Friedrich-Schiller University Jena, Germany. I write efficient codes for simulating light-matter interactions at atomic scales. I like to develop Physics, DFT, and Machine Learning related apps and software from time to time. Can code in most of the popular languages. I like to share my knowledge in Physics and applications using this Blog and a YouTube channel.

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