

# Numerical Integration Using Simpson 1/3 Method C Program

C Program for approximating definite integral of a continuous function using **Simpson's 1/3 Rule (Method)**

## Simpson 1/3 Rule C Program

```
#include<stdio.h>
#include<conio.h>
#include<math.h>

/* Define function here */
#define f(x) 1/(1+x*x)

int main()
{
    float lower, upper, integration=0.0, stepSize, k;
```

```

int i, subInterval;
clrscr();
/* Input */
printf("Enter lower limit of integration: ");
scanf("%f", &lower);
printf("Enter upper limit of integration: ");
scanf("%f", &upper);
printf("Enter number of sub intervals: ");
scanf("%d", &subInterval);

/* Calculation */
/* Finding step size */
stepSize = (upper - lower)/subInterval;

/* Finding Integration Value */
integration = f(lower) + f(upper);
for(i=1; i<= subInterval-1; i++)
{
    k = lower + i*stepSize;
    if(i%2==0)
    {
        integration = integration + 2 * f(k);
    }
    else

```

```
{
    integration = integration + 4 * f(k);
}
}
integration = integration * stepSize/3;
printf("\nRequired value of integration is: %.3f", integration);
getch();
return 0;
}
```

## Simpson's 1/3 Rule C Program Output

```
Enter lower limit of integration: 0
Enter upper limit of integration: 1
Enter number of sub intervals: 6

Required value of integration is: 0.785
```

### Recommended Readings

- 1 [Numerical Integration Trapezoidal Method Algorithm](#)
- 2 [Numerical Integration Using Trapezoidal Method Pseudocode](#)
- 3 [Numerical Integration Using Trapezoidal Method C Program](#)
- 4 [Trapezoidal Rule Using C++ with Output](#)
- 5 [Numerical Integration Using Simpson 1/3 Method Algorithm](#)
- 6 [Numerical Integration Using Simpson 1/3 Method Pseudocode](#)
- 7 [Numerical Integration Using Simpson 1/3 Method C Program](#)
- 8 [Simpson 1/3 Rule Using C++ with Output](#)
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