|  |
| --- |
| #include <math.h> |
|  | #include <stdio.h> |
|  |  |
|  | double f(double x) { |
|  | return (1 / (1 + x \* x)); |
|  | } |
|  |  |
|  | int main() { |
|  |  |
|  | double lower, upper, integration = 0.0, stepSize, k; |
|  | int i, subInterval; |
|  |  |
|  | printf("Enter lower limit of integration: "); |
|  | scanf("%lf", &lower); |
|  | printf("Enter upper limit of integration: "); |
|  | scanf("%lf", &upper); |
|  | printf("Enter number of sub intervals: "); |
|  | scanf("%d", &subInterval); |
|  |  |
|  | if(subInterval % 3 != 0){ |
|  | printf("Number of subintervals should be multiple of 3.\n"); |
|  | return 1; |
|  | } |
|  |  |
|  | stepSize = (upper - lower) / subInterval; |
|  | integration = f(lower) + f(upper); |
|  |  |
|  | for (i = 1; i <= subInterval - 1; i++) { |
|  | k = lower + i \* stepSize; |
|  | if (i % 3 == 0) |
|  | integration = integration + 2 \* f(k); |
|  | else |
|  | integration = integration + 3 \* f(k); |
|  | } |
|  | integration = integration \* stepSize \* 3 / 8; |
|  |  |
|  | printf("\nValue of the integral is:: %lf", integration); |
|  |  |
|  | return 0; |
|  | } |