#include <stdio.h>

#include "math.h"

#include "stdlib.h"

double ChordMethod(double \*function);

double Function1(double x); //Функция задания 1

double Function2(double x);

double Sum();

const double Eps1 = 0.001;

const double Eps2 = 0.0005;

int SplitLine = 10; //Число отрезков разбиения

int main()

{

double Task1;

double Task2;

Task1 = ChordMethod(Function1);

printf("TASK 1: \n");

printf("Value of x = %lf \n", Task1);

printf("Value of F(x) = %lf \n", Function1(Task1));

Task2 = Sum();

printf("TASK 2: \n");

printf("Value of Integral = %lf \n", Task2);

return 0;

}

double Function1(double x)

{

return (2\*sin(x)\*sin(x))/3-0.75\*cos(x)\*cos(x);

}

double Function2(double x)

{

return sqrt(tan(x));

}

double ChordMethod(double \*function)

{

double x;

double A = 0;

double Pi = atan(1)\*4;

double B;

double Fa;

double Fb;

double Fx;

B = Pi/2;

while(1)

{

Fa = Function1(A);

Fb = Function1(B);

x = (A\*Fb - B\*Fa)/(Fb-Fa);

Fx = Function1(x);

if (Fx \* Fa < 0)

{

B = x;

}

else

{

A = x;

}

if (fabs(Fx) < Eps1) break;

}

return x;

}

double Sum()

{

int i = 0;

double A = 0.0;

double Pi = atan(1)\*4;

double B;

double H;

double S = 0;

double NewS = 0;

B = Pi/6;

H = (B - A)/SplitLine;

for(i; i < (SplitLine - 1); i++)

{

S += Function2(A + H\*i + H/2);

}

S \*= H;

SplitLine++;

while (1)

{

H = (B - A)/SplitLine;

for(i; i < SplitLine - 1; i++)

{

NewS += Function2(A + H\*i + H/2);

}

NewS \*= H;

if(fabs((NewS - S)) < Eps2)

{

break;

}

else

{

SplitLine++;

S = NewS;

NewS = 0;

}

}

return NewS;

}