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#include<iostream>
#include<cmath>
#include<assert.h>
#include<algorithm>
#include<string>
using namespace std;
double f(double x)
{
      return sqrt(1 + 5 * log(x)) / x;
}
int main()
      setlocale(LC_ALL, "Rus");
      double suml = 0, sumr = 0, sumc = 0, sumt = 0, simp = 0, a, b, h;
      int count = 0;
      cout << "Введите границы интеграла а и b: ";
      cin >> a >> b;
      /*cout << "\n\nПри 1 шаге";
      cout << "\nЛевых прямоугольников: " << fixed << f(1) * 99;
      cout << "\пЦентральных прямоугольников: " << fixed << f(50.5) * 99;
      cout << "\nПравых прямоугольнико: " << fixed << f(100) * 99;*/
      h = (b - a) / 10;
      // 10 шагов
      for (double i = a; i < b; i += h)</pre>
             suml += f(i);
             sumr += f(i + h);
             sumc += f(i + h / 2);
             sumt += (f(i) + f(i + h)) / 2;
             /*if (count == 0 || count == 100)
                    simp += f(i);
             else */if (count % 2 == 1)
                    simp += f(i - h) + 4 * f(i) + f(i + h);
             count++;
      cout.precision();
      cout << "Ручной подсчёт: 15.568736474";
      cout << "\n\nПри 10 шагах";
      cout << "\nЛевых прямоугольников: " << fixed << suml * h;
      cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
      cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
      cout << "\n\nТрапеций: " << fixed << sumt * h;
      cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
      suml = 0;
      sumr = 0;
      sumc = 0;
      sumt = 0;
      simp = 0;
      count = 0;
      h = (b - a) / 20;
      // 100 шагов
      for (double i = a; i < b; i += h)
             suml += f(i);
              sumr += f(i + h);
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sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
}
cout.precision();
cout << "\n\n\nПри 20 шагов";
cout << "\nЛевых прямоугольников: " << fixed << suml * h;
cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 50;
// 100 шагов
for (double i = a; i < b; i += h)</pre>
      suml += f(i);
       sumr += f(i + h);
       sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
cout.precision();
cout << "\n\n\nПри 50 шагов";
cout << "\пЛевых прямоугольников: " << fixed << suml * h;
cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\propty " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 100;
// 100 шагов
for (double i = a; i < b; i += h)</pre>
{
       suml += f(i);
       sumr += f(i + h);
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sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
}
cout.precision();
cout << "\n\n\nПри 100 шагов";
cout << "\пЛевых прямоугольников: " << fixed << suml * h;
cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 200;
// 100 шагов
for (double i = a; i < b; i += h)</pre>
{
       suml += f(i);
       sumr += f(i + h);
       sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
cout.precision();
cout << "\n\nПри 200 шагов";
cout << "\пЛевых прямоугольников: " << fixed << suml * h;
cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 500;
// 100 шагов
for (double i = a; i < b; i += h)
       suml += f(i);
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sumr += f(i + h);
       sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
}
cout.precision();
cout << "\n\nПри 500 шагов";
cout << "\пЛевых прямоугольников: " << fixed << suml * h;
cout << "\nЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 1000;
// 100 шагов
for (double i = a; i < b; i += h)</pre>
       suml += f(i);
       sumr += f(i + h);
       sumc += f(i + h / 2);
       sumt += (f(i) + f(i + h)) / 2;
       /*if (count == 0 || count == 100)
              simp += f(i);
       else */if (count % 2 == 1)
              simp += f(i - h) + 4 * f(i) + f(i + h);
       count++;
cout.precision();
cout << "\n\nПри 1000 шагов";
cout << "\пЛевых прямоугольников: " << fixed << suml * h;
cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
suml = 0;
sumr = 0;
sumc = 0;
sumt = 0;
simp = 0;
count = 0;
h = (b - a) / 5000;
// 100 шагов
for (double i = a; i < b; i += h)</pre>
{
       suml += f(i);
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sumr += f(i + h);
              sumc += f(i + h / 2);
              sumt += (f(i) + f(i + h)) / 2;
              /*if (count == 0 || count == 100)
                     simp += f(i);
              else */if (count % 2 == 1)
                     simp += f(i - h) + 4 * f(i) + f(i + h);
              count++;
       }
       cout.precision();
       cout << "\n\nПри 5000 шагов";
       cout << "\пЛевых прямоугольников: " << fixed << suml * h;
       cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
       cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
       cout << "\n\nТрапеций: " << fixed << sumt * h;
cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
       suml = 0;
       sumr = 0;
       sumc = 0;
       sumt = 0;
       simp = 0;
       h = (b - a) / 10000;
       count = 0;
       // 10000 шагов
       for (double i = a; i < b; i += h)</pre>
       {
              suml += f(i);
              sumr += f(i + h);
              sumc += f(i + h / 2);
              sumt += (f(i) + f(i + h)) / 2;
              /*if (count == 0 || count == 100)
                     simp += f(i);
              else */if (count % 2 == 1)
                     simp += f(i - h) + 4 * f(i) + f(i + h);
              count++;
       cout.precision();
       cout << "\n\nПри 10000 шагов";
       cout << "\пЛевых прямоугольников: " << fixed << suml * h;
       cout << "\пЦентральных прямоугольников: " << fixed << sumc * h;
       cout << "\nПравых прямоугольнико: " << fixed << sumr * h;
       cout << "\n\nТрапеций: " << fixed << sumt * h;
       cout << "\n\nСимпсона: " << fixed << simp * (h / 3);
}
```