```cpp
/*
 * main.cpp
 *
 *  Created on: Sep 9, 2024
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 */


#include <iostream>
#include "adaptive_integration.hpp"

using namespace std;

// Function to test
double func1 (double x){
        return std::abs(x + cos(pow(x,5)));
}

int main(){

        uint32_t func_counter = 0;
        double result = 0;
        // Call recursive function
        result = func_ASI(func1, 0, M_PI, 10e-2, func_counter);
        cout << "Result (10e-2) : " << result << endl;
        cout << "Number of function calls : " << func_counter << endl;

        func_counter = 0;
        result = 0;
        // Call recursive function
        result = func_ASI(func1, 0, M_PI, 10e-3, func_counter);
        cout << "Result (10e-3) : " << result << endl;
        cout << "Number of function calls : " << func_counter << endl;

        func_counter = 0;
        result = 0;
        // Call recursive function
        result = func_ASI(func1, 0, M_PI, 10e-4, func_counter);
        cout << "Result (10e-4) : " << result << endl;
        cout << "Number of function calls : " << func_counter << endl;

        func_counter = 0;
        result = 0;
        // Call recursive function
        result = func_ASI(func1, 0, M_PI, 10e-8, func_counter);
        cout << "Result (10e-8) : " << result << endl;
        cout << "Number of function calls : " << func_counter << endl;

        return 1;
}
```