

Lab 1.4.1 Floats: operators and expressions

Objectives

Familiarize the student with:

- the concept of integers, floating-point numbers, operators and arithmetic operations in C++ programming;
- understanding the precedence and associativity of C++ operators as well as the proper use of parentheses;
- performing basic calculations.

Scenario

Take a look at the code below: it reads a float value, puts it into a variable named x and prints the value of a variable named y . Your task is to complete the code in order to evaluate the following expression:

$$y = \frac{x^2}{\pi^2 \left(x^2 + \frac{1}{2}\right)} \cdot \left(1 + \frac{x^2}{\pi^2 \left(x^2 - \frac{1}{2}\right)^2}\right)$$

We expect the result to be assigned to y .

Note: we've prepared a variable containing the value of π . Use it.

Be careful! Watch the operators and keep their priorities in mind. Remember that classical algebraic notation likes to omit the multiplication operator – you need to use it explicitly.

Don't hesitate to use as many parentheses as you need. Keep your code clean and readable – surround the operators with spaces.

Use additional variables to shorten the expression.

Hint: multiply x by x to get x squared.

Test your code by using the data we've provided – don't be discouraged by any initial failures. Be persistent and inquisitive. Good luck!

```
#include <iostream>

using namespace std;

int main(void) {
    float pi = 3.14159265359;
    float x,y;

    cout << "Enter value for x: ";
    cin >> x;

    // put your code here

    cout << "y = " << y;
    return 0;
}
```

Example input

1

Example output

y = 0.0949234

Example input

-1.5

Example output

y = 0.0890702

Example input

12.345

Example output

y = 0.101057