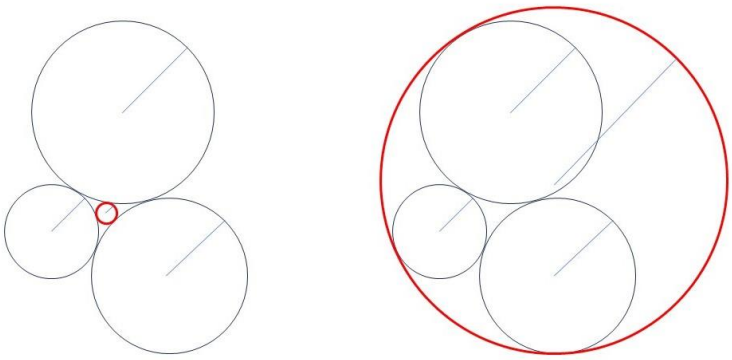
18 The Kiss Precise

8 points

Introduction

Four circles to the kissing come.
The smaller are the benter.
The bend is just the inverse of
The distance form the center.
Though their intrigue left Euclid dumb
There's now no need for rule of thumb.
Since zero bend's a dead straight line
And concave bends have minus sign,
The sum of the squares of all four bends
Is half the square of their sum.

In 1936 the mathematician Frederick Soddy published in *Nature* magazine this poem summarizing Descartes circle theorem. This theorem is about determination of a circle touching three mutually tangent circles (also called the kissing circles problem). There are two solutions: a small circle surrounded by the three original circles, and a large circle surrounding the original three. See them in red in the picture.



But if you prefer a math language description here you have the formula

$$2\left(s_1^2 + s_2^2 + s_3^2 + s_4^2\right) = (s_1 + s_2 + s_3 + s_4)^2$$

having that

$$s_i = \frac{1}{r_i}$$

where r_i is the radius of circle i.

This can be solved as a quadratic equation with two solutions. One of these solutions is positive (corresponds to inner circle), and the other is either positive or negative (corresponds to outer circle); if the second solution is negative, it must represent a circle that is internally tangent to the other three.

Can you write a program to find out the radios of inner and outer circles?

Input

The input is composed by three lines:

The first line contains the radius of the first circle.

The second line contains the radius of the second circle.

The third line contains the radius of the third circle.

Output

The output is composed by two lines:

The first line contains the radius of the inner circle with 5 decimal places.

The second line contains the radius of the outer circle with 5 decimal places.

Example

Input

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1
2
5
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Output

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0.28663
-11.25437
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