
Missing triangle

P32572_en

Dotzè Concurs de Programació de la UPC - Semifinal (2014-07-02)

Dirby just draw a triangle with red ink, and then he draw its circumcircle and its incircle with blue ink. However, he spilled some water into his drawing and unfortunately the red ink disappeared. Dirby is too lazy to make another drawing, so he wants to reconstruct the triangle given the two circles. Since he is not too good in geometry, he wants you to do this task for him. Can you?

Input

Input consists of several cases, each one with six real numbers x_1, y_1, r_1, x_2, y_2 and r_2 , which indicate the center and the radius of the circumcircle and of the incircle, respectively. You can assume that the incircle is inside the circumcircle, that the coordinates do not exceed 1000 in absolute value, and that they have at most 8 decimal digits. No given case is ill-conditioned.

Output

For every case, print with 8 digits after the decimal point the coordinates x, y of the vertices of a triangle that has the desired circumcircle and incircle, all separated by spaces. If there is more than one solution, print any of them. If there is no solution, print "impossible".

Observations

Calculate using the `long double` type. Solutions that fulfill the mathematical conditions with a "reasonable small" error will be accepted. Similarly, assume that a solution is possible when the distances the the circles are "small enough". For this problem, the judge will use a huge $\varepsilon = 10^{-4}$.

Sample input

```
4 3 5 2 2 2
4 3 5 2 2 2.5
```

Sample output

```
0.00000000 0.00000000 8.00000000 0.00000000 0.00000000 6.00000000
impossible
```

Problem information

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Generation : 2024-04-30 19:16:51