Three points P10622_en

Let $d(p, q)$ denote the geometric distance between two points p and q on the plane. Given three points a, b and c, please choose three points a', b' and c' such that:

- a', b' and c' are on the same straight line;
- the sum of distances $d(a, a') + d(b, b') + d(c, c')$ is as small as possible.

Input

Input consists of several cases, each one with three different points a, b and c. Every given point has two real coordinates with at most two digits after the decimal point, and with absolute value between 0 and 10^6.

Output

For every case, print the minimum sum of distances with four digits after the decimal point. The input cases have no precision issues.

Sample input 1

```
0 0   100 0   0 100
-1.5 -0.5   0.5 0.5   2.5 1.5
```

Sample output 1

```
70.7107
0.0000
```

Problem information

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