Goat Rope

Problem ID: goatrope
CPU Time limit: 1 secon
Memory limit: 1024 MB
Difficulty: 1.5

Source: 2018 ICPC Mid-C Regional

You have a fence post located at the point (x, y) in the plane, to which a goat is tethered by a rope. You also have a house, which you model as an axis-aligned rectangle with diagonally opposite corners at the points (x_1, y_1) and (x_2, y_2). You want to pick a length of rope that guarantees the goat cannot reach the house.

Determine the minimum distance from the fence post to the house, so that you can make sure to use a shorter rope.

Input

The input consists of a single line containing six space-separated integers x, y, x_1, y_1, x_2, and y_2, each in the range $[-999, 999]$.

It is guaranteed that $x_1 < x_2$ and $y_1 < y_2$, and that (x, y) is strictly outside the axis-aligned rectangle with corners at (x_1, y_1) and (x_2, y_2).

Output

Print the minimum distance from the goat's post to the house, with a relative or absolute error no more than 0.001.

Sample Input 1

```
7 3 0 0 5 4
```

Sample Output 1

```
2.0
```

Sample Input 2

```
6 0 0 2 7 6
```

Sample Output 2

```
2.0
```

Sample Input 3

```
3 -4 -3 -1 -1 2
```

Sample Output 3

```
5.0
```