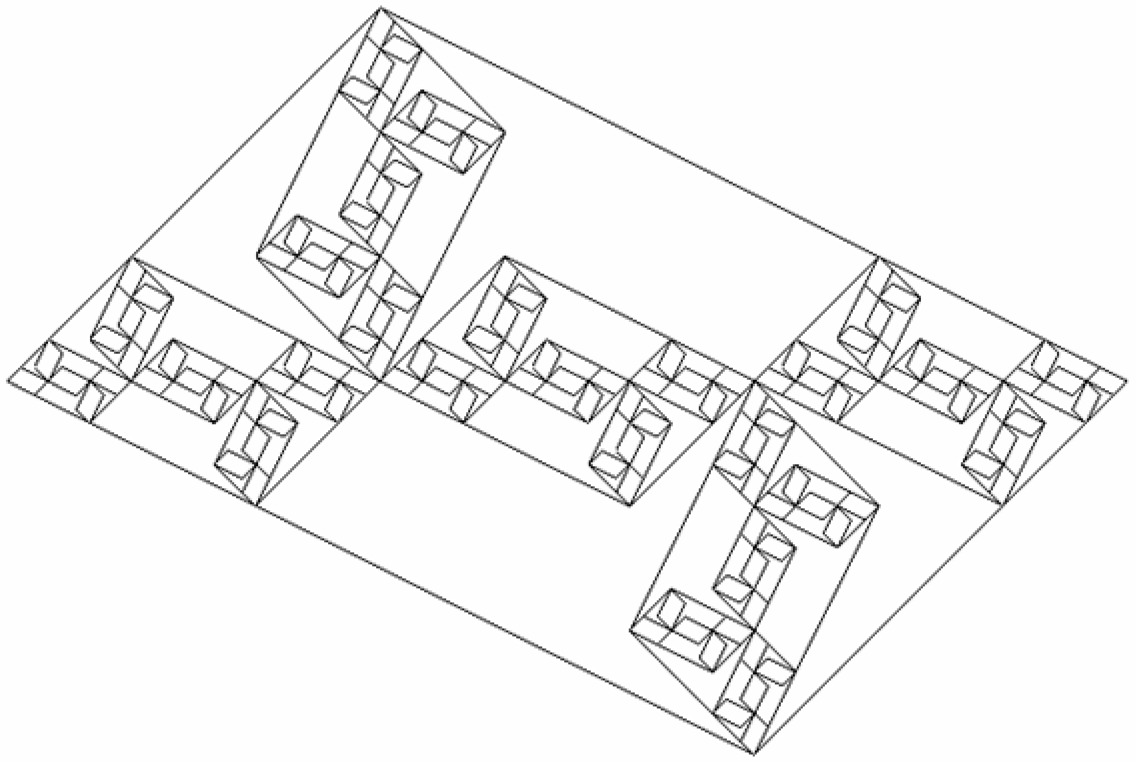
Given two points a and b on a two dimensional plane, a curious mind can play many curious games. One such curious game would be to draw two pairs of parallel lines through these points, the first pair being inclined at and angle of θ_1 and the second pair being inclined at an angle of θ_2 with ab, resulting in a parallelogram. Let the other two points on the parallelogram be c and d such that c is the one lying on left hand side when looking at b from a. So now we have the parallelogram $acbd$ having diagonals ab and cd. Now the mathematical mind sees that it has discovered an interesting way of constructing parallelograms from a pair of points and decides to name this operation mumbo and happily defines a notation for this operation $mumbo(a, b)$.

Note that the parallelograms produces by $mumbo(a, b)$ and $mumbo(b, a)$ for any two points on the plane have same shape but different orientation.



To take the game a little farther, the mathematical mind divides the diagonal ab into three equal parts ae, ef and fb. Joining e with c and f with d produces a strange picture that farther increases the curiosity of the mathematical mind. To satisfy its curiosity the mind decides to apply the operation mumbo on these 5 line segment. The result after applying $mumbo(a, e)$, $mumbo(e, f)$, $mumbo(f, b)$, $mumbo(e, c)$ and $mumbo(f, d)$ is an even strange picture showing five smaller parallelograms inside the initial larger parallelogram. All six of the parallelograms have similar shape but some has different orientation and they have same size except for the initial one which in fact contains all the other parallelograms inside itself.

Happily, the mind names this operation of producing smaller parallelograms of same shape jumbo. The notation for this operation is $jumbo(a, d, b, c)$ where a, d, b and c are the vertices of the parallelogram in counter clockwise order.

The mind takes the game even farther by recursive mumbo jumbo many times, resulting in a very strange picture consisting of parallelograms of same shape but different sizes and orientations. Now, to satisfy the ultimate curiosity, for any two points P_1 and P_2 on the plane, the mind wants to know the area of the smallest parallelogram not containing any other parallelogram that contains both of these points. To keep things simple, mind has decided that θ_1 should be the angle $\angle cab$ and always be $\tan^{-1}(1)$ and θ_2 should be the angle $\angle abd$ and always be $\tan^{-1}(1/2)$.

Input

There will be multiple test cases, each on a seperate line. Each line will contain eight floating point numbers X_a, Y_a, X_b, Y_b, X_{P_1}, Y_{P_1}, X_{P_2}, Y_{P_2} denoting coordinates of a, b, P_1 and P_2 respcetively. Here a and b are the points to start mumbo jumbo with. You can assume that P_1 and P_2 will be distinct and at least 10^{-6} units apart.

Output

For each line of input, your program should produce a line of output consisting of a single floating point number having four digits after decimal point denoting the area of the smallest parallelogram produced by mumbo jumbo which contains both P_1 and P_2 but does not contain any other parallelogram that contain both of these points. If either or both of the points are outside of the parallelogram, then print '-1' as output. If a point lies exactly on a vertex of a parallelogram then the point is considered to be inside the parallelogram.

Sample Input

```
0 0 81 0 9 1 9 9
0 0 81 0 27 0 27 13.5
0 0 81 0 27 0 27 13.5
0 0 81 0 0 0 300 3
0 0 81 0 3 0 3 3
```

Sample Output

```
27.0000
243.0000
243.0000
-1
3.0000
```