Problem D. Old Solution Methods

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

There are 6 distinct points A, B, C, D, E, F on the plane. Points A, B, and C are not collinear.

Svetozar drew a line a through points A and D, a line b through points B and E, and a line c through points C and F. It turned out that none of these lines are parallel. Now he wants to rotate line a around point A, line b around point B, and line c around point C counterclockwise by the same angle, then find the intersection points of the resulting lines, and then draw a triangle with vertices at the obtained three points (if they are not collinear).

Svetozar wants to obtain a triangle with the largest possible area. If it is not possible to form a triangle, Svetozar considers the area to be zero. Find this area.

Input

The first line contains a single integer T ($1 \le T \le 10^5$), denoting the number of test cases.

Then T descriptions of test cases follow. Each description consists of 6 lines, describing points A, B, C, D, E, F respectively. Each point description consists of two integers x and y ($-20 \le x, y \le 20$): the coordinates of the point.

It is guaranteed that in each test case all points are distinct, points A, B, and C are not collinear, and the lines AD, BE, and CF are pairwise not parallel.

Output

For each test case, output a single real number with an absolute or relative error not exceeding 10^{-6}: the largest possible area of the triangle. It is guaranteed that in none of the tests this area exceeds 10^7.

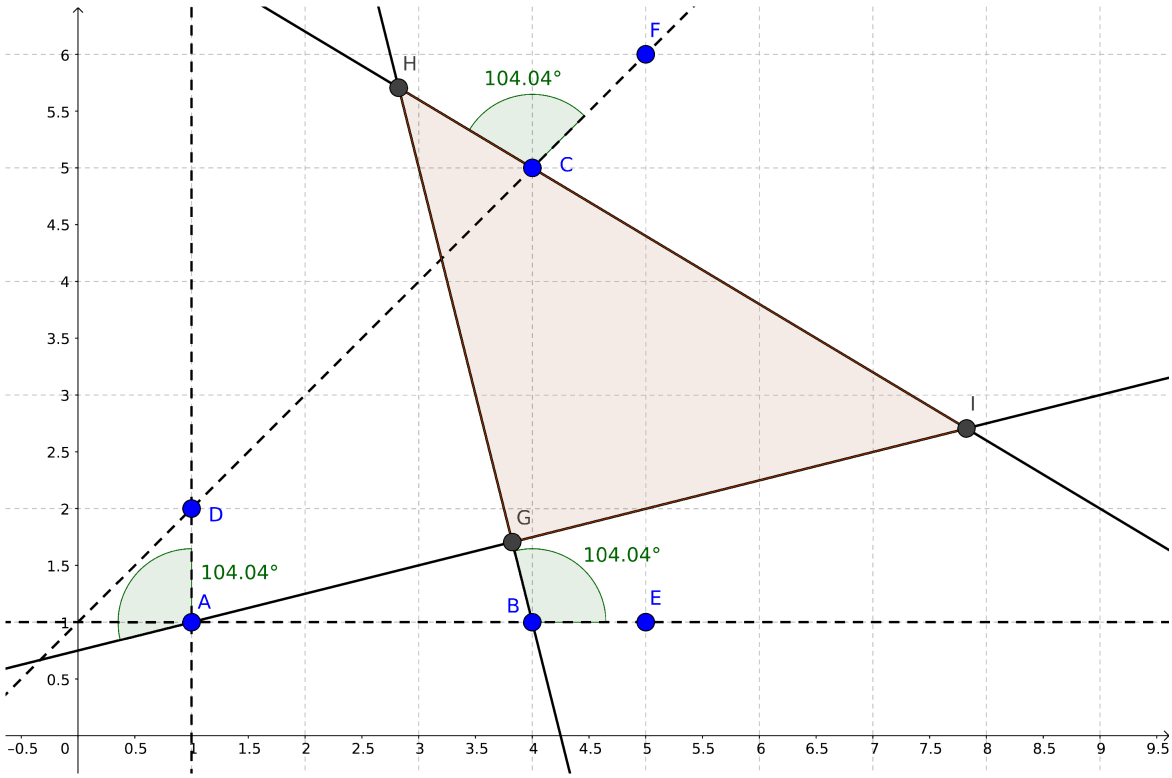
Example

standard input	standard output
1 1 1 4 1 4 5 1 2 5 1 5 6	8.500000000

Note

In the example, the maximum possible area is achieved by rotating the lines by an angle approximately equal to $104.036°$. The triangle with the largest area has sides equal to $\sqrt{17}$, $\sqrt{17}$, $\sqrt{34}$, and vertices at points (a, b), $(a-1, b+4)$, and $(a+4, b+1)$, where $a \approx 3.8235$, $b \approx 1.7059$.

In the illustration below, the original lines are marked with dashed lines, and the lines after rotation are marked with solid lines:


H
F
104.04°
C
I
D
G
104.04°
104.04°
A
B
E