Triangle Uika

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

At the masquerade ball held by Ave Mujica, three puppets, Doloris, Oblivionis, and Mortis, will move along paths formed by moonlight points on the stage. Doloris claims that these paths symbolize the threads of fate woven for them. When the area of the triangle formed by the three puppets reaches its maximum, the moon, which was engulfed by shadows, will be revived, and the three puppets will gain temporary life.

Ave Mujica

The stage can be viewed as a two-dimensional plane. The path of the i-th puppet is composed of n_i moonlight points, represented by $(x_{i,1}, y_{i,1})$, $(x_{i,2}, y_{i,2})$, $\ldots$, (x_{i,n_i}, y_{i,n_i}). Each puppet will start at the first moonlight point and move at a constant speed of one unit to the next point, until it stops at the last point.

Please calculate the maximum area of the triangle formed by the three puppets during the process from when they simultaneously start, until they all reach their respective final points.

Input

The first line contains three integers n_1, n_2, and n_3 ($n_i \geq 1, n_1 + n_2 + n_3 \leq 10^5$), denoting the number of moonlight points on the paths of Doloris, Oblivionis, and Mortis, respectively.

For the following n_1 lines, the i-th line contains two integers x_i and y_i ($-10^6 \leq x_i \leq 10^6, -10^6 \leq y_i \leq 10^6$), denoting the coordinates of the i-th moonlight point on Doloris' path.

For the following n_2 lines, the i-th line contains two integers x_i and y_i ($-10^6 \leq x_i \leq 10^6, -10^6 \leq y_i \leq 10^6$), denoting the coordinates of the i-th moonlight point on Oblivionis' path.

For the following n_3 lines, the i-th line contains two integers x_i and y_i ($-10^6 \leq x_i \leq 10^6, -10^6 \leq y_i \leq 10^6$), denoting the coordinates of the i-th moonlight point on Mortis' path.

It is guaranteed that the coordinates of two adjacent points on a path are different.

Output

Output a real number, denoting the maximum area of the triangle formed by the three puppets.

Your answer will be considered correct if the relative or absolute error does not exceed 10^{-6}. Formally speaking, suppose that your output is a and the jury's answer is b, your output is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-6}$.

It is guaranteed that the coordinates of two adjacent points on a path are not exactly the same.

Examples

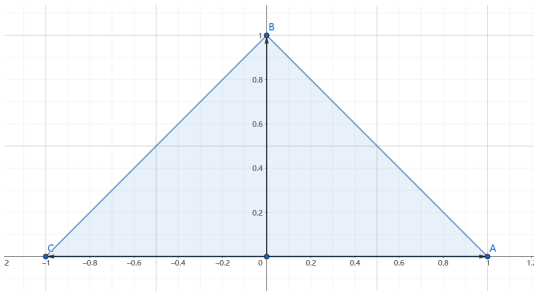
standard input	standard output
2 2 2 0 0 1 0 0 0 0 1 0 0 -1 0	1.0000000000
1 2 2 0 0 0 0 2 2 0 2 2 2	0.3535533906

Note

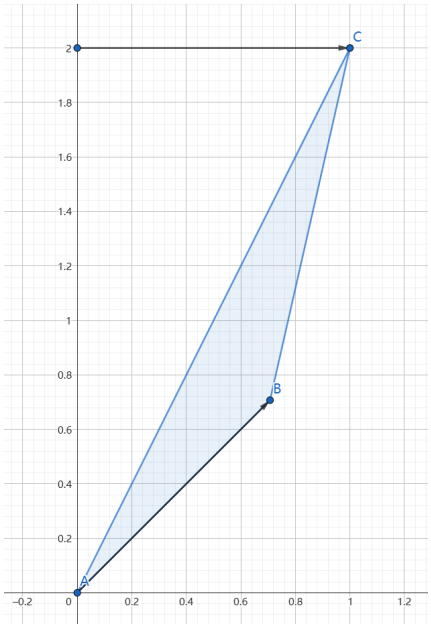
Assume the three puppets start moving simultaneously at time $t = 0$.

For the first example, the area of the triangle reaches its maximum at time $t = 1$. At that moment, the coordinates of Doloris, Oblivionis, and Mortis are $(1, 0)$, $(0, 1)$, and $(-1, 0)$ respectively, and the area of the triangle is 1.

For the second example, the area of the triangle reaches its maximum at time $t = 1$. At that moment, the coordinates of Doloris, Oblivionis, and Mortis are $(0, 0)$, $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$, and $(1, 2)$ respectively, and the area of the triangle is $\frac{\sqrt{2}}{4}$.



Example 1 Illustration



Example 2 Illustration