

Satellite Internet

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 256 megabytes

Pasha is traveling by train from Moscow to Izhevsk — he has another contest tomorrow. Suddenly, while passing through Vekovka, he realized that he made a mistake in the interactor for one of the problems, and he urgently needs to send a new interactor. However, the interactor is huge, and for a guaranteed upload, Pasha needs each satellite located above Russia to be available.

Unfortunately, a lot of clouds have gathered directly above the train's route today. Fortunately, in this problem, the cloud accumulation can be considered as a segment, and the train's route can be represented as a horizontal segment. Unfortunately, the cloud accumulation is significant, which means this accumulation must be treated as impenetrable for the satellite signal. The endpoints of the segment are also considered impenetrable.

More formally: each satellite can be thought of as a point. A satellite is considered available from a point on the train's route if there are no clouds between them. Help Pasha find the nearest point on the route to Moscow from which all satellites are available.

Input

The first line contains a single integer N ($1 \leq N \leq 10^5$) — the number of satellites. The next N lines each contain exactly two integers x_i and y_i ($-10^4 \leq x_i \leq 10^4; 1 \leq y_i \leq 10^4$), which are the coordinates of the i -th satellite.

The following line contains two integers $startx$ and $endx$ ($-10^4 \leq startx < endx \leq 10^4$). The train's route is represented by the segment connecting the points $(startx, 0)$ and $(endx, 0)$. The start of the route is at the point $(startx, 0)$.

The next line contains 4 integers $cloud_{x1}$, $cloud_{y1}$, $cloud_{x2}$, $cloud_{y2}$ ($-10^4 \leq cloud_{x1}, cloud_{x2} \leq 10^4; 1 \leq cloud_{y1}, cloud_{y2} \leq 10^4$) — the coordinates of the endpoints of the cloud segment. It is guaranteed that the cloud segment has a non-zero length.

It is guaranteed that a solution exists. It is guaranteed that if all satellites are accessible from point X , there is a segment of length 10^{-5} that contains point X , from which all satellites are accessible. It is guaranteed that satellites do not lie on the straight line containing the cloud segment.

Output

Output the X -coordinate of the sought point on the train's route. The answer must differ from the correct answer by no more than 10^{-5} in absolute or relative error.

Example

standard input	standard output
2	1.666666666666667
1 1	
5 5	
0 3	
-2 9 3 2	

Note

The left satellite is available from any point on the route. The right satellite is available on the segment from $1\frac{2}{3}$ to the end of the route.

