Monitored Area

Input file:	`standard input`
Output file:	`standard output`
Time limit:	10 seconds
Memory limit:	512 megabytes

Curator George owns a gallery full of valuable artworks. To monitor and protect the artworks in this gallery, there are many CCTV cameras installed.

The gallery can be viewed as a simple polygon. And the cameras can be viewed as points inside the polygon.

We say that one point in the gallery is monitored if there exists a camera such that the segment between the camera and the point is inside the gallery.

Now George asks for your help to calculate the area of the monitored points.

Input

The first line contains an integer n ($3 \le n \le 50$) — the number of vertices of the polygon.

Then n lines follow. The i-th line contains two integer x, y ($|x|, |y| \le 100$) — the coordinates of the i-th polygon vertex. The vertices are given in clockwise order, and no three consecutive vertices are collinear.

The next line contains an integer m ($1 \le m \le 50$) — the number of cameras.

Then m lines follow. The i-th line contains two integer x, y ($|x|, |y| \le 100$) — the coordinate of the i-th camera.

It is guaranteed that the cameras are strictly inside the gallery.

Output

Output the area of the monitored points. Your answer should have an absolute or relative error less than 10^{-6}. Namely, if your answer is a and the jury's answer is b, then your answer is accepted if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Example

standard input	standard output
8 0 0 0 5 5 5 5 10 10 10 10 5 50 5 50 0 1 8 7	79.166666667