Problem I. Best Sun

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

Ivan likes painting. He decided to paint a sun.

To do that, he took n points with integer coordinates on the plane. Ivan will draw segments connecting some pairs of points to get the best sun.

- Ivan will connect exactly n pairs of points with segments between them.

- All segments should not intersect (except for endpoints).

- There should be exactly one cycle. This cycle should be a convex polygon.

- Each point that is not one of the polygon vertices should lie outside of the polygon and should be connected with one of the polygon's vertices.

- It is possible that all vertices will lie on the cycle.

Ivan wants to paint a bright, pretty sun. So he came up with the score of the sun:

- Let us define S as the area of the polygon.

- Let us define P as the sum of lengths of all drawn segments.

- The value $\dfrac{S}{P}$ is the score of the sun.

What is the **maximum** possible score of the sun?

Input

The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. Description of test cases follows.

The first line of each test case contains a single integer n ($3 \le n \le 300$) — the number of points.

Each of the next n lines contains two integers x_i, y_i ($|x_i|, |y_i| \le 10^6$). All points are different. No three points lie on the same line.

It is guaranteed that the sum of n^2 for all test cases does not exceed $90\,000$.

Output

For each test case, print a single real number — the maximum possible score of the sun that can be drawn.
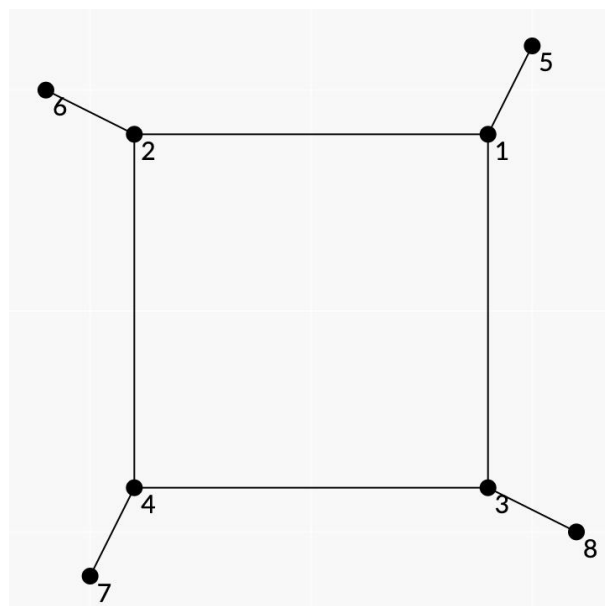
The absolute or relative error should not exceed 10^{-6}.

Example

standard input	standard output
4	0.3090169943749474
3	1.2368614277111258
-1 -1	0.2711375415034555
1 -1	1.5631002094915825
0 1	
4	
0 0	
10 0	
0 10	
8 1	
5	
2 0	
-2 0	
1 1	
-1 1	
0 3	
8	
4 4	
-4 4	
4 -4	
-4 -4	
5 6	
-6 5	
-5 -6	
6 -5	

Note

The picture of the sun with the maximum score in the fourth test case:

For this sun, $S = 64$, $P = 32 + 4\sqrt{5}$, so its score is $\dfrac{64}{32 + 4\sqrt{5}}$.