

Competitive Programming SS24

Submit until end of contest

Problem: versailles (1.0 second timelimit)

At the end of 1999, France was confronted by a huge storm that destroyed many parts of our forests. One of the most emblematic was the park of the Versailles palace, where hundreds of old trees fell. It took much effort to clean up fallen trees.

At the time, the age of the trees was reevaluated by counting the number of rings appearing in each tree's cross-section. The more rings, the older the tree is. To speed up the job, pictures of all trees were taken. Now, your work is to process the pictures and deduce the age of the trees.

The input for your program is a list of some points present in rings. The rings are no longer available, but you can reconstruct them by computing a series of convex hulls. To find the first ring, you can compute the convex hull of all of the points. Then, to find the next ring, you can remove those points on the hull and compute the convex hull of the remaining points, and so on. When there are no points left, the age of the tree is given by the number of hulls found.



Figure 1: In example 1 there is just one ring.

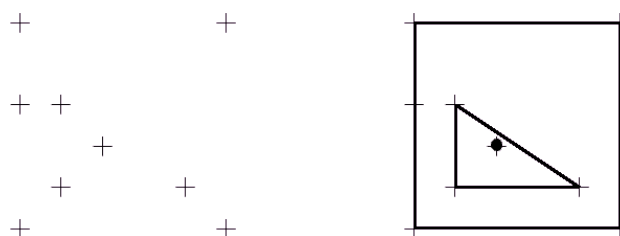


Figure 2: In example 2 there are three rings.

Input The first line contains the number of testcases T ($1 \leq T \leq 20$). T testcases follow. Each of them contains several lines of integers. The first line contains one integer, the number n of points of the sample ($1 \leq n \leq 3000$). The next n lines each contain two integers, the abscissa x_i and ordinate y_i of the i -th point. All points are pairwise distinct and have coordinates in $[-50000, 50000]$.

Output For each test case, print one line containing one integer, the age of the tree.

Sample input

Sample output

2	
4	
0	0
1	0
1	1
0	1
9	
0	0
0	3
5	0
5	5
0	5
1	1
1	3
4	1
2	2

1
3