IOITC 2019
Team Selection Test 1

Figure 8

A $Figure - 8$ consists of 2 convex polygons which share a single common edge. Apart from this shared edge (and the 2 common vertices), they do not share anything else, and they do not intersect or touch with each other anywhere else. The areas that they enclose should also be disjoint. The 2 convex polygons which constitute the Figure-8 should both have at least 3 vertices each, of which 2 are common.

You are given N distinct points in the 2d plane such that no three points are collinear. You need to construct a Figure-8 which has each of its vertices as one of the N given points, and which encloses all the N points. That is, each of the N points, should either be a vertex of the Figure-8, or should be inside it. And you want to construct this in such a way, that the number of points from among the N points, which are on the boundary of the Figure-8 is maximized. Output this maximum number possible.

Input

- The first line contains a single integer, T, which denotes the number of testcases. The description of each testcase follows.
- The first line of each testcase contains a single integer, N, which denotes the number of points.
- The i^{th} of the next N lines contains two space-separated integers, x_i and y_i. This denotes the coordinates of the i^{th} point.

Output

For each testcase, output a single integer in a new line, which should denote the maximum number of points on the boundary of a valid Figure-8.

Constraints

- $-10^5 \leq x_i, y_i \leq 10^5$
- No two points in a single testcase will be the same.
- No three points in a single testcase will be collinear.

Subtasks

- Subtask 1: 32%: $1 \leq T \leq 10$ and $4 \leq N \leq 50$
- Subtask 2: 68%: $T = 1$ and $4 \leq N \leq 400$

Sample Input 1

```
1
4
3 4
6 7
4 1
9 5
```

Sample Output 1

```
4
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Explanation 1

There are 2 valid Figure-8s possible in this case. One possibility, which is shown in the image below, is to have the convex polygons $P_1P_2P_3$ and $P_2P_4P_3$, which have the edge P_2P_3 in common. Or you could also have the Figure-8 which consists of the two polygons $P_1P_2P_4$ and $P_1P_3P_4$. In both the cases, all the 4 points are on the boundary of the Figure-8, and hence the maximum is 4, which is the answer.