Problem D: Geode Slices

Filename: `geode`

Time limit: `10 seconds`

Points: 20

You are exploring a cave on vacation, admiring the beauty of nature. What specifically catches your eye are the geodes inside of the cave. “How can nature create something so geometrically appealing by chance”, you wonder.

Figure 1. A geode slice with many layers.

Fortunately, mother nature answers your question, stating that the process for creating these enamoring crystals is based on randomly selecting some number of points and drawing lines connecting them such that no two lines intersect.

After hearing this, you have two questions. The first of which is whether it was mother nature who answered your question, or your own delusions from being so far deep in the cave. The second and far more interesting question: it is clear to you that the more nested layers a geode slice has, the prettier it is, so is mother nature’s process really the best that can be done?

The Problem

Given a set of points that mother nature selects on a geode slice, determine the maximum number of layers that the geode slice can have. **Note: Each nested layer can be any shape. All that is required is that each polygon in each layer can not intersect at all with any of the other layer’s polygon.**

The Input

The first line of input contains an integer $\boldsymbol{t}$ ($1 \leq \boldsymbol{t} \leq 100$), representing the number of input cases to process.

The first line in each input case contains one integer $\boldsymbol{n}$ ($1 \leq \boldsymbol{n} \leq 10^3$), representing the number of vertices.

The next n lines of each input case each contain 2 integers $\boldsymbol{x}$ and $\boldsymbol{y}$ ($-10^6 \leq \boldsymbol{x}, \boldsymbol{y} \leq 10^6$), representing the x and y coordinates for one of the $\boldsymbol{n}$ vertices. It is guaranteed that no two points will have both the same x and y, and that no three points are colinear.

The Output

Each test case should output a single integer on its own line, representing the maximum number of layers the given points can make.

Sample Input

```
2
4
1 1
-1 1
-1 -1
1 -1
7
2 1
1 3
5 6
-1 5
6 1
0 -1
3 3
```

Sample Output

```
1
2
```

Sample Explanation: In the first sample, the four points form a square, which is one layer. There is no way to form two layers. In the second sample, points (-1, 5), (5, 6), (6, 1) and (0, -1) form an outer layer quadrilateral and the points (2, 1), (1, 3) and (3, 3) form a triangle that is completely inside of the aforementioned quadrilateral.