Problem J. Rikka with Triangles

Description

Rikka places n points on a two-dimensional Cartesian coordinate system. The coordinate of the i^{th} point is (x_i,y_i) . She wants to choose three points to make a weapon, and then she will use it to fight against the administration of "invisible boundaries".

To make this weapon more powerful, Rikka restricts the shape of the triangle to acute triangles. There may be several legal plans to make the weapon. Rikka wants you to calculate the sum of the areas of the triangles among all these plans.

Two plans are considered different if and only if they differ in at least one point.

NOTE: You can use __int128 in your program.

Input

The first line contains a single integer T(1 <= T <= 5), the number of the test cases.

For each test case, the first line contain a single integer n(3 <= n <= 2000) , the number of the points. And then n lines follow, each line contains two integers x and y ($|x|,|y| <= 10^{18}$), the coordinates of a point. The input guarantees that no two points are identical.

Output

Let S be the sum of the areas, it can be proved that 2×S is an integer.

Since the answer may be very large, you only need to output 2×S modulo 998244353 (a prime number).

Sample Input

```
3
3
1 1
2 2
2 3
3
1 1
2 3
3 2
4
1 1
3 1
4 1
2 3
```

Sample Output

```
0
3
10
```