# 6 Fencing the cows

时间限制：10000ms 空间限制：256MB

## 6.1 题目描述

Little ColdHand wants to build a fence to enclose his cows' grazing area. However, in order for the fence to be effective, it must include all $m$ grass locations. Otherwise, the cows might rebel against him.

To address this issue, Little ColdHand sought assistance from the Interstellar Cow Company. However, the company provided him with only $n$ fence points, and he can only build the fence from a point to another point. The final cost will be **the number of points** used.

Little ColdHand is aware that the most cost-effective fence would be a convex hull, but he doesn't know the exact number of points required for it. Therefore, he has approached you to help solve this problem:

Determine the **minimum** number of points needed to construct a fence that completely encloses all $m$ grass-eating locations.

P.S. If the fence intersects any of the grass locations, we do not consider those locations as fully enclosed.

## 6.2 输入格式

The first line of input contains the integer $T$ ($1 \leq T \leq 10$), the number of test cases. The description of test cases follows.

The first line of each test case contains two integers, $n$ and $m$ ($1 \leq n \leq 500, 1 \leq m \leq 500$) —the number of fence points and the number of grass locations.

Each of the next $n$ lines contains the description of fence points. Each line contains two integers $x_i$ and $y_i$ ($-10^9 \leq x_i, y_i \leq 10^9$), describes the fence point $a_i$ at $(x_i, y_i)$.

Each of the next $m$ lines contains the description of grass location. Each line contains two integers $x_i$ and $y_i$ ($-10^9 \leq x_i, y_i \leq 10^9$), describes the grass location $b_i$ at $(x_i, y_i)$.

it is guaranteed that the sum of $n$ and $m$ over all test cases both do not exceed 4000.

## 6.3 输出格式

For each test case, if any solution exists, output an integer in a line, indicating the **minimum** cost of fence. otherwise, output $-1$

## 6.4 输入输出样例

输入样例：

```
2
4 1
1 1
1 -1
-1 1
-1 -1
0 0
4 1
1 1
1 -1
```

-1 1
-1 -1
1 0
输出样例：
4
-1