UVa Online Judge

13231 Catch the Rats

Rats are loose upon the world, each at a 2D coordinate. Bob is going to release a number of devices to catch the rates. If the device falls on the rat, the rat is caught. All rats on the segment between any 2 given devices is also considered caught. Finally, all rats that fall within the triangle formed by any 3 devices is considered caught. Calculate the minimum number of devices needed to catch all rats.

Input

A number of of inputs (≤ 100) described as follows. The first two integers n and m ($0 < n, m \leq 300$).
The next n lines are two integers x, y, representing the coordinates of a rat.
The next m lines is two integers x, y, that can be a coordinate of the device.
All coordinates fit into 32 bit unsigned integers.

Output

For each input, output the minimum number of devices needed on a single line.
If it is not possible to cat all rats, output '`-1`' on a single line.

Sample Input

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

Sample Output

```
3
```