

Fossil in the Ice

A small group of archaeologists is working in the Antarctic. Their sensors have detected a number of caves in which there are interesting fossils. However, a thick layer of ice blocks the entrance to each cave. The archaeologists possess the equipment needed to burn a tunnel in the layer of ice, but the fuel is extremely expensive. In order to determine the size of each fossil the group has launched a number of probes through small bore-holes. Each probe which hit the fossil emits a signal consisting of its x and y coordinates. Your task is to determine the smallest possible size of the tunnel, which is equal to the maximal distance between any two probes (so that the fossil won't be damaged during extraction). The drilling equipment needs to be provided with the squared value of this distance.

Given the list of coordinates of the points containing probes, find the square of the maximal distance between any two probes.

Input

t [the number of tests ≤ 20]
[empty line]
 n [the number of active probes ≤ 100000]
 $x_1 y_1$ [coordinates of the first probe]
...
 $x_n y_n$
[integer coordinates from -50000000 to 50000000]
[empty line]
[input for the next test cases...]

Text grouped in [] does not appear in the input file.

Output

o_1 [the square of the maximal distance in the first set]
[output for the next test cases...]

Example

Input:

```
5

1
2 -3

4
0 0
-2 2
2 2
1 0

6
-4 2
2 2
5 0
0 5
```

6 1
-1 -1

10
0 0
5 1
9 2
12 3
14 4
15 5
16 7
17 10
18 14
19 19

10
2 -3
-1 2
0 5
-5 -1
-4 2
4 0
1 3
4 3
-3 -4
0 -2

Output:

0
16
101
722
98