Problem D. Yellow Blue Bus

Input file:	`standard input`
Output file:	`standard output`
Time limit:	6 seconds
Memory limit:	512 mebibytes

You are given n blue points and m yellow points. You need to find a circle such that all blue points are located outside or on the boundary of this circle, and all yellow are located inside or on the boundary of this circle.

The tests for this problem were generated in such a way that, for each test case, there exists a circle with the following properties:

- the radius is $r \leq 10^9$,
- the center is at a point (x, y) where $|x| \leq 10^9$ and $|y| \leq 10^9$,
- for each blue point P, the distance from the center to P is at least $r + 10^{-7} \cdot \max(1, r)$, and
- for each yellow point Q, the distance from the center to Q is at most $r - 10^{-7} \cdot \max(1, r)$.

To check when *your* answer will be considered correct, see output format.

Input

The first line contains t, the number of test cases you need to solve ($1 \leq t \leq 10^5$).

The first line of each test case contains an integer n, the number of blue points ($1 \leq n \leq 50\,000$).

Each of the next n lines contains two integers x and y: the coordinates of a blue point ($-10^9 \leq x, y \leq 10^9$).

The next line contains an integer m, the number of yellow points ($1 \leq m \leq 50\,000$).

Each of the next m lines contains two integers x and y: the coordinates of a yellow point ($-10^9 \leq x, y \leq 10^9$).

It is guaranteed that, in each test case, all points (blue **and** yellow) are pairwise distinct. Additionally, the sum of n over all test cases does not exceed $50\,000$, and the sum of m over all test cases does not exceed $50\,000$.

Output

For each test case, output two lines.

On the first line, output a **real** number r, the radius of your circle.

On the second line output two **real** numbers x and y, the coordinates of the center of your circle.

Your answer will be considered correct if:

- $0 \leq r \leq 10^{10}$,
- $|x| \leq 10^{10}$ and $|y| \leq 10^{10}$,
- for each blue point P, the distance from center to P is at least $r - 10^{-7} \cdot \max(1, r)$, and
- for each yellow point Q, the distance from center to Q is at most $r + 10^{-7} \cdot \max(1, r)$.

Example

standard input	standard output
3	1.001
3	3 3
3 1	1.000
1 3	1.5 1.5
4 5	1.001
3	0 0
3 3	
4 3	
3 4	
2	
0 0	
-1 -1	
2	
1 1	
2 2	
4	
2 0	
0 2	
-2 0	
0 -2	
4	
1 0	
0 1	
-1 0	
0 -1	