

Problem G. Avoid bombings

- Time Limit: 2 sec

Problem Statement

You are developing a video game of avoiding bombings. A player initially stands at the origin of an infinite two-dimensional plane, and the player can move in arbitrary directions at up to the speed limit specified in this game. Then there will be bombings N times. The i -th bombing occurs at time T_i and attacks everywhere on the plane except for a *safety zone*. The shape of a safety zone may be different per bombing but is always a convex polygon on the plane. To avoid a bombing, when it occurs the player must be inside its safety zone. Here, the border of a safety zone is also considered as a part of the safety zone. The player clears this game if they successfully avoid all the N bombings. The player can know the information of all the N bombings prior to the beginning of this game.

You have already decided the shape of the safety zones of all the N bombings. The remaining task is to decide the limit of the speed that a player can move at. Of course, the faster the player can move, the easier the game is. On the other hand, the limit of the speed is too slow, it may become impossible to clear this game. In order to adjust the difficulty of this game, please calculate the minimum limit of the player's speed that the player requires to clear the game.

Input

The input consists of multiple independent test cases given in the following format.

```
C
case1
case2
⋮
caseC
```

The first line consists of an integer C ($1 \leq C \leq 20$) representing the number of test cases in the input. Then each of the C test cases follows in the following format.

```
N
T1 M1
x1,1 y1,1
x1,2 y1,2
⋮
x1,M1 y1,M1
T2 M2
x2,1 y2,1
x2,2 y2,2
⋮
x2,M2 y2,M2
⋮
TN MN
xN,1 yN,1
xN,2 yN,2
⋮
xN,MN yN,MN
```

Here, N is the number of bombings in this test case ($1 \leq N \leq 20$). The information of the i -th bombing consists of T_i representing the time that the bombing occurs ($1 \leq T_i \leq 100$), M_i representing the number of vertices of the polygon as the safety zone for the i -th bombing ($3 \leq M_i \leq 20$), and $(x_{i,j}, y_{i,j})$ representing the coordinates of the j -th vertex of the i -th polygon ($-100 \leq x_{i,j} \leq 100$, $-100 \leq y_{i,j} \leq 100$). The vertices of a polygon are given in counter-clockwise order. It is guaranteed that all the given polygons are convex. No three vertices of a single polygon are on the same line. You may assume that $T_1 < T_2 < \dots < T_N$.

All values in the input are integers.

Output

For each test case, output in a line a single number, which is the minimum limit of the player's speed that the player requires to clear the game. In particular, if the player can avoid all the bombings even without moving, the answer is 0. The output must not contain an error greater than 10^{-5} .

Sample Input	Sample Output
3 2 10 3 3 4 7 4 3 8 15 4 0 8 8 0 16 8 8 16 3 1 4 0 0 10 0 10 10 0 10 2 4 0 0 -10 0 -10 -10 0 -10 3 4 10 10 -10 10 -10 -10 10 -10 3 10 3 1 1 2 1 1 2 15 3 2 1 2 2 1 2 30 3 3 3 5 3 5 4	0.5 0 0.141421356