

Problem K. Klingon Attack

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 1024 mebibytes

You are developing a video game. The goal of the game is to avoid attacks from the famous alien race called the Klingons. The player initially stands at the origin of an infinite two-dimensional plane. The player can move in arbitrary directions at speeds up to the speed limit specified by the game.

There will be N attacks from the Klingon ships. The i -th attack occurs at time T_i and bombs every point of the plane except for the safety zone. The shape of the safety zone may be different for each attack, but it is always a convex polygon on the plane. To avoid the bombing when it occurs, the player must be inside this safety zone. The border of the safety zone is also considered safe. The player clears this game if they successfully avoid all the N attacks. The player knows the information about all the N attacks prior to the beginning of this game.

You have already determined the shapes of the safety zones of all the N attacks. The remaining task is to set the speed limit for the player. Of course, the faster the player can move, the easier the game is. On the other hand, if the limit is too low, it may become impossible to clear this game. In order to adjust the difficulty of this game, please calculate the minimum speed limit that makes it possible to clear the game.

Input

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

Each test case starts with a line containing a single integer N : the number of Klingon attacks in this test case ($1 \leq N \leq 20$). The descriptions of the attacks follow.

The description of the i -th attack starts with a line consisting of two integers: T_i , the time of the attack ($1 \leq T_i \leq 100$), and M_i , the number of vertices of the polygon which is the safety zone for the i -th attack ($3 \leq M_i \leq 20$). Then M_i lines follow, each containing two integers $(x_{i,j}, y_{i,j})$ 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 polygons 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 $T_1 < T_2 < \dots < T_N$.

Output

For each test case, print a line with a single real number which is the minimum speed limit that makes it possible to clear the game. In particular, if the player can avoid all the bombings even without moving, the answer is 0. Each answer is considered correct if its absolute or relative error is at most 10^{-5} .

Examples

<i>standard input</i>	<i>standard output</i>
2 2 10 3 3 5 7 5 3 9 15 4 0 9 8 1 16 9 8 17 3 10 3 1 0 2 0 1 1 15 3 2 0 2 1 1 1 30 3 3 2 5 2 5 3	0.5830951894904501 0.1201850425186421
1 3 1 4 0 0 5 0 5 5 0 5 2 4 0 0 -5 0 -5 -5 0 -5 3 4 5 5 -5 5 -5 -5 5 -5	0.0000000000009095