Problem C
Largest Empty Circle on a Segment

Input File: C.IN
Output File: standard output
Program Source File: C.C, C.CPP, C.JAVA

We are given *N* line segments on the 2D plane. We want to find the maximum radius of an empty circle whose center coordinates *(xc,yc)* are constrained as follows:

- $0 \le xc \le L$
- $yc = 0$

A circle is empty if no part of a segment is located strictly inside of it (thus, a segment may touch the circle, but may not intersect with the interior of the circle).

The first line of the input file contains the number of test cases *T*. The test cases are described next. The first line of a test case contains the integer numbers *N* and *L* (*1 ≤ N ≤ 2000* and *0 ≤ L ≤ 10000*). The next *N* lines of the test case contain 4 integers each, describing the coordinates of the endpoints of a segment: *xa*, *ya*, *xb* and *yb*. The coordinates of the endpoints of the segment are *(xa,ya)* and *(xb,yb)*. All the coordinates are between -20000 and +20000. Every two consecutive numbers on the same line are separated by a single blank.

For each test case print a line containing a real number *R*, denoting the maximum radius of an empty circle whose center obeys the constraints. The number must be printed with 3 decimal digits (the number must be rounded up or down according to the usual rounding rules).

Sample Input	Sample Output
1 4 10 1 1 10 3 5 3 9 1 3 1 4 1 8 3 11 -3	2.118