13292   Blowing Candles

As Jacques-Édouard really likes birthday cakes, he celebrates his birthday every hour, instead of every year. His friends ordered him a round cake from a famous pastry shop, and placed candles on its top surface. The number of candles equals the age of Jacques-Édouard in hours. As a result, there is a huge amount of candles burning on the top of the cake. Jacques-Édouard wants to blow all the candles out in one single breath.

   You can think of the flames of the candles as being points in the same plane, all within a disk of radius R (in nanometers) centered at the origin. On that same plane, the air blown by Jacques-Édouard follows a trajectory that can be described by a straight strip of width W, which comprises the area between two parallel lines at distance W, the lines themselves being included in that area. What is the minimum width W such that Jacques-Édouard can blow all the candles out if he chooses the best orientation to blow?

Input

The input file contains several test cases, each of them as described below.

   The first line consists of the integers N and R, separated with a space, where N is Jacques-Édouard's age in hours. Then N lines follow, each of them consisting of the two integer coordinates x_i and y_i of the i-th candle in nanometers, separated with a space.

Limits

- $3 \le N \le 2 \cdot 10^5$;

- $10 \le R \le 2 \cdot 10^8$;

- for $1 \le i \le N$, $x_i^2 + y_i^2 \le R^2$;

- all points have distinct coordinates.

Output

For each test case, the output must follow the description below.

   Print the value W as a floating point number. An additive or multiplicative error of 10^{-5} is tolerated: if y is the answer, any number either within $[y - 10^{-5}; y + 10^{-5}]$ or within $[(1 - 10^{-5})y; (1 + 10^{-5})y]$ is accepted.

Sample Input

```
3 10
0 0
10 0
0 10
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Sample Output

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7.0710678118654755
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