## K: 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 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

- $3 \leqslant N \leqslant 2 \cdot 10^{5}$;
- $10 \leqslant R \leqslant 2 \cdot 10^{8}$;
- for $1 \leqslant i \leqslant N, x_{i}^{2}+y_{i}^{2} \leqslant R^{2}$;
- all points have distinct coordinates.


## Output

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 $\left[y-10^{-5} ; y+10^{-5}\right]$ or within $\left[\left(1-10^{-5}\right) y ;\left(1+10^{-5}\right) y\right]$ is accepted.

## Sample Input

| 3 | 10 |
| :--- | :--- |
| 0 | 0 |
| 10 | 0 |
| 0 | 10 |

## Sample Output

7.0710678118654755

