Most Distant

Keko has N dots in a 2-D coordinate plane. He wants to measure the gap between the most distant two dots. To make the problem easier, Keko decided to change each dot's x *or* y coordinate to zero.

Help Keko calculate the distance!

Input Format

The first line contains an integer, N, the number of dots.
The next N lines each contain the integer coordinates of the dots in (x, y) fashion.

Constraints

$2 \leq N \leq 10^6$
$-10^9 \leq x_i, y_i \leq 10^9$

It is guaranteed that all dots are distinct, and either their x or y coordinate is equal to 0.

Output Format

Print the distance between the most distant dots with an absolute error of, at most, 10^{-6}.

Sample Input

```
4
-1 0
1 0
0 1
0 -1
```

Sample Output

```
2.000000
```

Explanation

In the sample, the most distant dots are located at $(-1, 0)$ and $(1, 0)$.
The distance between them is 2.