Problem C
Largest Quadrilateral

Time limit: 6 seconds
Memory limit: 2048 megabytes

Problem Description

Given a **multiset** of n points (x_i, y_i) on a 2-D grid, your task is to find the area of the largest quadrilateral (polygon with 4 vertices) made from 4 different vertices in the given multiset. Two vertices are considered to be different if and only if their corresponding position in the multiset are different.

Input Format

The first line contains one positive integer n, which is the number of points. For the following n lines, the $(i+1)$-th line, there are two integer x_i and y_i, which is the i-th point in the multiset.

Output Format

Output one number, the area of the largest quadrilateral.

Technical Specification

- $4 \leq n \leq 10^4$
- $-10^9 \leq x_i, y_i \leq 10^9$
- Do not use scientific notation, e.g. outputting `3E+8` for `300000000`
- Do not output redundant characters, e.g. outputting `3.0` for `3`

Sample Input 1

```
4
0 0
0 2
2 0
1 1
```

Sample Output 1

```
2
```

Sample Input 2

```
4
0 0
1 0
```

```
0 1
3 2
```

Sample Output 2

```
2.5
```