DMPG '18 G5 - Triangles

Given N points with coordinates $(x_1, y_1), (x_2, y_2), \ldots, (x_N, y_N)$, determine the largest possible area of a triangle formed by three of these N points.

Constraints

For all subtasks,
$|x_i|, |y_i| \leq 10\ 000$ for all $1 \leq i \leq N$
All coordinates are guaranteed to be distinct.

Subtask 1 [30%]

$3 \leq N \leq 500$

Subtask 2 [70%]

$3 \leq N \leq 4\ 000$

Input Specification

The first line will contain a single integer, N.
The next N lines will each contain two space separated integers x_i and y_i, the coordinates of the i^{th} point.

Output Specification

Output a single number, the largest possible area. Your answer will be judged as correct if your area has an absolute error of no more than 10^{-3}.

Sample Input 1

```
7
2 13
5 5
-6 3
0 0
7 10
-8 4
2 3
```

Sample Output 1

```
56.000
```

Sample Input 2

```
3
1 5
4 5
7 5
```

Sample Output 2

```
0.000
```