Convex Hull

Time Limit: 1 Second
Memory Limit: 256 MB

You are given n points $p_1, \ldots, p_n$ on a two dimensional plane, and you are asked to calculate area of the convex hull of the points.

Input

The first line of input contains a single integer n ($3 \leq n \leq 10^5$) - number of points given.

For the next n lines, each line contains two integers x_i, y_i ($|x_i|, |y_i| \leq 10^6$) - the location of the i-th point. It is guaranteed that the locations are distinct.

Output

Output the area of the convex hull of the given points. Your answer will be accepted if it has an absolute or relative error within 10^{-6}.

Sample Inputs

```
5
0 0
1 0
2 2
1 1
0 1
```

Sample Outputs

```
2
```