Strictly Convex Pairs

Time limit: *3000 ms*
Memory limit: *256 MB*

There is a polygon with N vertices in standard 2-D Cartesian coordinates. The polygon is **strictly convex**. That is, the polygon is convex, and there are no three collinear vertices (i.e. lying in the same straight line).

There are M other distinct points which are located strictly inside or outside the polygon (not on polygon edges). Andy wants to pick two different points a and b from those M points so that he can connect a and b with a straight **line segment** without intersecting or touching the polygon. Andy is curious about how many different unordered pairs of points a and b he can pick. Can you help Andy to count that?

Note: An unordered pair (a, b) is the same as the pair (b, a).

Standard input

The first line of the input contains two integers, N and M.

The next N lines describe the convex polygon. Each line contains two integers indicating x-coordinate and y-coordinate of one vertex. The vertices are given in counter-clockwise order.

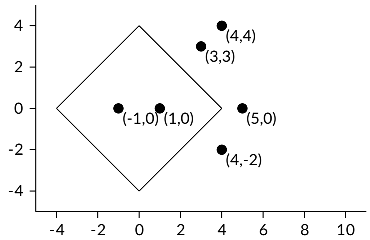
The next M lines describe points that Andy can pick. Each line contains two integers indicating x-coordinate and y-coordinate of one point.

Standard output

Print one integer representing the number of pairs.

Constraints and notes

- $3 \leq N \leq 2 \times 10^5$
- $2 \leq M \leq 2 \times 10^5$
- $-10^9 \leq x$-coordinate, y-coordinate $\leq 10^9$
- The polygon is strictly convex.
- All M points are distinct and not located on any polygon edges.

Input	Output	Explanation
4 6 4 0 0 4 -4 0 0 -4 5 0 1 0 -1 0 3 3 4 -2 4 4	5	

The five pairs that can be picked are:

- point $(5, 0)$ and point $(3, 3)$
- point $(5, 0)$ and point $(4, -2)$
- point $(5, 0)$ and point $(4, 4)$
- point $(1, 0)$ and point $(-1, 0)$
- point $(3, 3)$ and point $(4, 4)$