

H. Laser Sightline Obstruction

Standard I/O | Time Limit: 3.0s | Memory Limit: 256MB

In the central observatory of Sector 2026, two reconnaissance autonomous drones, Unit-M and Unit-L, are conducting optical calibration tests. Across the observation floor (modeled as a 2D Cartesian plane), there are N infrared emitter nodes and M optic receiver beacons scattered at distinct coordinates.

Unit-M must dock at one of the N infrared emitter nodes, while Unit-L must dock at one of the M optic receiver beacons. To establish a secure quantum optical link, the direct line of sight (the straight line segment connecting Unit-M and Unit-L) must remain completely unobstructed.

However, a massive cylindrical radiation shielding column stands in the chamber. The column's cross-section is represented as a circular disk centered at coordinates (x_c, y_c) with radius r . All emitter nodes and receiver beacons lie strictly outside this cylindrical disk.

The drones are micro-scale, so their positions can be modeled as points coinciding with their respective docked nodes. Two docked drones can establish a valid optical link if and only if the line segment connecting them does not intersect or touch the circular shielding column. Other nodes and beacons do not obstruct the laser sightline.

Determine the total number of distinct pairs (one emitter node for Unit-M and one receiver beacon for Unit-L) that permit an unobstructed optical line of sight.

Input

The first line contains two integers N and M ($1 \leq N, M \leq 10^5$), denoting the number of emitter nodes and receiver beacons, respectively.

The second line contains three integers x_c, y_c , and r ($|x_c|, |y_c| \leq 10^4$; $1 \leq r \leq 10^4$), describing the center coordinates and radius of the shielding column.

Each of the next N lines contains two integers x_i and y_i ($|x_i|, |y_i| \leq 10^4$), denoting the coordinates of an infrared emitter node.

Each of the next M lines contains two integers x_i and y_i ($|x_i|, |y_i| \leq 10^4$), denoting the coordinates of an optic receiver beacon.

All $N + M$ node locations are pairwise distinct. All nodes lie strictly outside the column disk and are at distance at least 10^{-6} from its boundary. It is guaranteed that perturbing any two nodes by a Euclidean distance of at most 10^{-6} in any direction will not alter whether the connecting segment intersects or touches the column.

Output

Print a single integer: the number of valid pairs of emitter and receiver nodes that have an unobstructed optical line of sight.

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

001 -20 20	
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