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Exercise – *Stamp Exhibition*

The National Postal Museum organizes a major exhibition of postage stamps. Many collectors from all over Europe have already agreed to present their most valuable pieces at this special event. However, Mr. Pennybag—owner of a well preserved "Basel Dove"—is still hesitating. He fears that the bright light in the museum might cause damage to his stamps. In order to prevent this, you were hired to set up the lamps.

The museum consists of one large room. The stamps are placed on the floor and the lamps hang down from the ceiling, lighting the room from above. In principle, any lamp can light any stamp in the museum. However, to enhance the ambiance, a number of movable wall-elements—simply called *walls* in the following—are placed all over the museum. The walls reach up to the ceiling of the room and block the light emitted by the lamps.

For simplicity, we model the situation in $\mathbb{R}^2$, much like the situation would be seen from above. Both lamps and stamps appear as points and the walls appear as line segments. All lamps can be dimmed individually. That is, you can set the power p_i of the i-th lamp to an arbitrary real value $1 \leq p_i \leq 2^{12}$. An object at distance r from the i-th lamp is illuminated at intensity $I(r) = p_i r^{-2}$, if there is no wall between them; or zero, if the line segment between the lamp and the stamp intersects a wall (any intersection counts, even if it is at an endpoint of the wall segment). Note that only walls block light, whereas lamps and stamps do not interfere with illumination.

The total illumination intensity I_j for the j-th stamp is obtained by adding up the respective intensities for all lamps. On the one hand, each stamp must be illuminated with total intensity at least one ($I_j \geq 1$) in order to be visible. On the other hand, for each stamp the respective owner may prescribe a maximum total illumination intensity M_j that is not to be exceeded ($I_j \leq M_j$).

You may assume that all input objects (lamps, stamps and walls) are pairwise disjoint.

Input The first line of the input contains the number of test cases $t \leq 100$. Each of the following t test cases is described as follows.

- It starts with a line that contains three integers ℓ, s, w separated by single spaces denoting the number of lamps, stamps and walls, respectively ($0 \leq w \leq 2'000$, $0 \leq \ell, s \leq 200$).
- ℓ lines follow. The i-th such line contains two integers x_i, y_i separated by single spaces, describing the position (x_i, y_i) of the i-th lamp ($|x_i|, |y_i| \leq 2^{24}$).
- s lines follow. The j-th such line contains three integers x_j, y_j, M_j separated by single spaces, describing the position (x_j, y_j) of the j-th stamp and the maximal allowed light intensity M_j ($|x_j|, |y_j| \leq 2^{24}$, $1 \leq M_j \leq 2^{24}$).
- w lines follow. The k-th such line contains four integers a_k, b_k, c_k, d_k, where (a_k, b_k) and (c_k, d_k) are the endpoints of the k-th wall ($|a_k|, |b_k|, |c_k|, |d_k| \leq 2^{24}$, $(a_k, b_k) \neq (c_k, d_k)$).

(See the next page for the rest of the description.)

Output For every test case the corresponding output appears on a separate line. It consists of a single word: `yes`, if it is possible to illuminate all stamps as required (i.e. $1 \leq I_j \leq M_j$ for $j = 1, \ldots, s$); and `no`, otherwise.

Points There are two groups of test sets. Each group that is solved correctly is awarded with 50 points. Therefore the maximum total number of points is 100.

1. For the first group of test sets, you may assume that there are no walls ($w = 0$). Corresponding example test sets are contained in the files `stamps-test1.in/out`.
2. For the second group of test sets, there are no additional restrictions. Corresponding example test sets are contained in the files `stamps-test2.in/out`.

Sample Input

```
3
1 1 1
0 1
0 -1 256
-1 0 1 0
2 2 0
0 0
1 0
-4 0 10
2 0 1
2 2 1
0 0
1 0
-4 0 10
2 0 1
0 1 1 -1
```

Sample Output

```
no
no
yes
```