Bipartite Graph Weighting Problem

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

You are given a bipartite graph. The left part contains n vertices, numbered from 1 to n, and the right part also contains n vertices, numbered from 1 to n. There are m edges, each connecting one vertex on the left to one vertex on the right.

You will be asked q independent queries. In each query, you are given three integers: (a, b, k).

For a fixed query (a, b, k), consider the following process on the given graph. Initially, every vertex (both left and right) has weight 0. You may perform the following operation any number of times:

- Choose an arbitrary subset S of the left vertices (possibly empty), and choose a positive real number $p > 0$.
- Let $N(S)$ be the set of right vertices that are adjacent to at least one vertex in S.
- Increase the weight of every vertex in S by $a \cdot p$.
- Increase the weight of every vertex in $N(S)$ by $b \cdot p$.

Let $p_1, p_2, \ldots, p_\ell$ be the values of p used in all your operations. These must satisfy

$$\sum_{i=1}^{\ell} p_i \leq 1.$$

Your goal is to choose the operations (the subsets S and the values p) so that **the total sum of the weights of all vertices** (both left and right) is at most k. Under this constraint, you should maximize the total sum of the weights of all vertices of the left part.

For each query (a, b, k), each time starting from all vertex weights equal to 0, compute the maximum possible total weight of the left part that can be obtained.

Input

The first line contains a single integer t ($1 \leq t \leq 1000$), the number of test cases. For each test case:

The first line contains three integers: n, m, and q ($1 \leq n \leq 2000$, $0 \leq m \leq 10^4$, $1 \leq q \leq 2 \cdot 10^5$).

Each of the next m lines contains two integers, u and v ($1 \leq u, v \leq n$), denoting an edge between left vertex u and right vertex v.

Each of the next q lines contains three integers: a, b, and k ($0 \leq a, b \leq 10^6$, $0 \leq k \leq 10^9$), describing a query.

There are no multiple edges. The sum of n does not exceed 2000. The sum of m does not exceed 10^4. The sum of q does not exceed $2 \cdot 10^5$.

Output

For each query, output a single real number: the maximum possible total sum of vertex weights of the left part that can be obtained for this query. Let your answer be a and the jury's answer be b. Your answer will be considered correct if $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-6}$.

Example

standard input	*standard output*
2 5 8 3 1 2 1 3 2 4 2 5 3 1 3 3 4 2 5 4 1 3 5 2 1 2 5 2 3 2 3 3 1 2 1 1 2 1 1 0 2 0 2 2 3 1 4	1.250000000000000 1.333333333333333 2.142857142857144 2.000000000000000 0.000000000000000 3.000000000000000