7026 Save the kids

Leonardo Da Vinci has entered a fort which has N catacombs numbered from 1 to N. A catacomb is an underground cemetery consisting of a subterranean gallery. His aim is to destroy each of the N catacombs, as quickly as possible.

The catacombs have a special structure. The catacombs are built in layers, with exactly one catacomb (numbered 1) in the topmost layer (layer number 1). If a catacomb is in the i-th layer, it will have exactly one passage to one of the catacombs in the $(i-1)$-th layer. Also, from each catacomb, there is exactly one way out, which is to keep going to the above layers till you reach the top layer. In graph theory terms, the catacombs structure is a tree rooted at vertex number 1.

Just before he was going to destroy the catacombs, his apprentice sent him a few messages with the information of the catacombs that have kids in them. Each message contains the number of the catacomb that has a kid inside it. Leonardo must not destroy any catacomb that would lead to a kid being trapped inside the fort. Leonardo has to find out how many catacombs he can destroy without trapping a kid inside.

Input

First line contains a single integer T, denoting the number of testcases.

Each testcase starts with a single integer N, denoting the number of catacombs.

Each of the next $N-1$ lines contains 2 numbers A and B indicating that there is a passage between catacomb number A and B.

Next line contains M, the number of messages Leonardo got from his apprentice, followed by M lines each containing an integer indicating the number of the catacomb that has a kid inside it.

Output

For each message, print the number of catacombs that Leonardo can destroy without trapping any of the kids mentioned so far in the messages.

Constraints:

- $1 \leq T \leq 10$
- $1 \leq N, M \leq 50000$
- $1 \leq A, B \leq N$

Explanation: The below system of catacombs have catacomb number 1 in layer 1 and catacomb number 2 in layer 2.

First message says that there is an kid in catacomb 2. Hence none of the catacombs can be destroyed (else the kid gets trapped).

In the second message, another kid is reported in catacomb 1. Still, none of the catacombs can be destroyed. Hence answer after each message is 0.

Sample Input

```
1
2
1 2
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2
2
1

Sample Output

0
0