Problem J

Elden Ring

Prof. Pang is getting addicted to the game called Elden Ring, in which the world is a connected graph including n vertices indexed from 1 to n and m undirected edges. Players start at vertex 1 and travel across the world to slay the god on vertex n.

However, it's not that easy. For any vertex i except vertex 1, there is exactly one boss whose level is l_i, and the player starts the game with level l_1. For each day, the player can travel to any vertex i from vertex 1 and challenge the boss there. If the current level of the player is greater than the boss, the boss will be eliminated from the world (inactivated) and the level of the player will be increased by A. Notice that traveling through a vertex that has an active boss is forbidden. (In other words, Prof. Pang can travel from vertex 1 to vertex i if there is a path in the graph from vertex 1 to vertex i such that each vertex on this path, except for vertex i, has no active boss.) Meanwhile, at the beginning of each day, all the remaining bosses in the world will also be promoted by B levels.

To finish a playthrough of the game, you need to slay the boss on vertex n (Elden Beast). Given the information of the world, Prof. Pang is wondering how many days he needs at least to do so.

The Player can only challenge one boss each day.

Input

The first line contains a single integer T $(1 \le T \le 10^5)$ denoting the number of test cases.

For each test case, the first line includes four integers n, m, A, B $(1 \le n, m, A, B \le 2 \times 10^5)$. In next m lines, each line contains two integers a_i, b_i $(1 \le a_i, b_i \le n)$, denoting the endpoints of the i-th undirected edge. The last line contains n integers l_i $(1 \le l_i \le 2 \times 10^5)$, representing the initial levels of the player and bosses mentioned above.

It is guaranteed that the sum of n over all test cases will not exceed 10^6 and the sum of m over all test cases will not exceed 10^6.

Output

For each test case, output a single line containing an integer, indicating the minimum number of days Prof. Pang needs to finish the game. If it is impossible to do so, please output -1.

Sample Input	Sample Output
2 5 4 5 8 1 2 1 3 1 4 4 5 15 1 1 1 1 5 4 10 5 1 2 1 3 1 4 4 5 10 4 4 4 19	2 4