Standard input

The input has one integer n on the first line representing the number of towns.

The second line has n integers describing the prices at each town. The ith integer is p_i.

Each of the next $n-1$ lines has two integers x, y describing one bidirectional road connecting town x to town y.

Lastly there is a line with an integer k, the number of merchants. This is followed by a line with k distinct integers giving the starting towns of each merchant.

Standard output

Output a single integer, the largest total profit the merchants can make.

Constraints and notes

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq p_i \leq 10^9$
- $1 \leq k \leq n$
- It is guaranteed that all towns are connected by roads.

Input	Output	Explanation
12 3 1 2 3 5 6 7 2 2 4 10 11 1 2 1 3 4 2 5 2 3 6 6 7 6 8 6 9 8 10 9 11 9 12 5 3 8 4 11 12	12	• The merchant starting at town 4 travels to town 5, buying at town 2 for 1 dollar and selling at town 5 for 5 dollars (earning 4 dollars). • The merchant starting at town 3 travels to town 1, buying at town 3 for 2 dollars and selling at town 1 for 3 dollars (earning 1 dollar). • The merchant starting at town 8 travels to town 10, buying at town 8 for 2 dollars and selling at town 10 for 4 dollars (earning 2 dollars). • The merchant starting at town 11 travels to town 7, buying at town 9 for 2 dollars and selling at town 7 for 7 dollars (earning 5 dollars). • The merchant starting at town 12 does not travel.