Graph Contest 3 P1 - Travelling Salesmen

Time Limit: 1.0s **Memory Limit:** 32M

Some travelling salesmen would like to market their fine wares to N cities in a faraway country.
Salesmen can be found at company offices, which can be found in a select few of these cities.
Now, given that the cities are connected with M roads (and that each bidirectional road takes an hour to traverse) how long will it take for the salesmen to visit every city?

Note: You may assume that there are at least N salesmen at each company office. Also, all cities will be connected to at least one company office.

Input Specification

$N \leq 1\,000$, $M \leq 100\,000$.
Following this will be M lines, each describing a road from city a to city b.
$K \leq N$, the number of company offices.
Following this will be K lines, each with the location of a company office.
Bonus: one case will have N, $K \leq 30\,000$.

Output Specification

The number of hours it will take for news of the product to spread.

Sample Input

```
4 3
1 2
2 3
3 4
2
1
2
```

Sample Output

```
2
```

City 4 will be visited last.