1001 : Multiplicatively closed set

Problem Description

An integer array A is called MCS (multiplicatively closed set) if $\forall i < j$,the number $A[i] * A[j]$ does occur in A. Today, dna049 get a array A of length n, tell him whether A is MCS.

Input:

There are $T(1 \leq T \leq 10)$ cases.
For each case:
The first line contains a positive integer $n(1 \leq n \leq 10^5)$,the length of A.
The second line contains n integers $A[1], A[2], \cdots, A[n](-10^9 \leq A[i] \leq 10^9)$.

Output:

For each testcase, output YES if A is MCS, otherwise output NO.

Sample Input

```
3
1
2
2
1 2
3
-2 3 1
```

Sample Output

```
YES
YES
NO
```

Hint: be careful.

1002: Non-trival solution

Problem Description

Long long ago, dna049 learned to solve equation $f(x, y) = ax^2+bxy+cy^2 = 0$. It is so easy, so now he want to solve

$$f(x, y) = ax^2 + bxy + cy^2 \equiv 0 \mod p,\ 0 < x, y < p$$

where p is a prime number.
If there are many solutions, just output the lexicographically smallest one, or -1 when no solution.

Input:

There are $T(1 \leq T \leq 10)$ cases.
For each case:
The only line contains four integer $a, b, c, p(0 \leq a, b, c, p \leq 10^9+9)$ as discribed above.

Output:

For each testcase, output lexicographically smallest (x, y) or -1 when no solution.

Sample Input

```
2
1 2 2 3
2 3 8 13
```

Sample Output

```
-1
1 1
```

1003: Meet in time

Problem Description

One day, dna049 and his G (gril,good,g?) friend traveling outside, there are n site they want to visit, some of them are direct connected, since dna049 and his G friend have different hobby, they decide to travel seperately, and meet at some site in m minus. Assume that, it takes 1 minus to travel between two direct connnected sites. At each site, he can choose to enjoy the site any minus, or just cross it to anthor site. he want to know how many ways to travel from start site to end site.

Input:

There are $T(1 \leq T \leq 10)$ cases.
For each case:
The first line contains two positive integer $n, m(1 \leq n \leq 100, 1 \leq m \leq 10^9)$
The second line contains two positive integer $s, t, q(1 \leq s, t \leq n, 1 \leq q \leq n^2)$.
The remains q lines each contains two positive integer $u, v(1 \leq u, v \leq n)$ indicate that u, v are direct connnected.

Output:

The answer maybe too large, just output it mod $10^9 + 7$.

Sample Input

1
2 3
1 2 1
1 2

Sample Output

4

Hint: $1 \to 1 \to 1 \to 2$, $1 \to 1 \to 2 \to 2$, $1 \to 2 \to 1 \to 2$, $1 \to 2 \to 2 \to 2$

1004: dna049 love pow sum

Problem Description

It is said that Gauss can solve $1 + 2 + \cdots + n$ when he was about ten years old. Now dna049 eager to solve $1^k + 2^k + \cdots + n^k$, however, In order to show respect to Gauss, please calculate

$$1^k + (1+2)^k + \cdots + (1+2+\cdots n)^k$$

The result perhapes too large, just output the answer mod prime number p

Input:

There are $T(1 \leq T \leq 10)$ cases.
For each case:
The only line contains three integer $n, k, p(1 \leq n, 10^7 \leq p \leq 10^9+9, 0 \leq k \leq 10^6)$ discribed above.

Output:

For each testcase,output the answer mod prime number p

Sample Input

```
2
3 0 7
3 2 13
```

Sample Output

```
3
7
```