Summing the K-N-R Series



Mandarin | Russian | Japanese

You are given a sequence whose $n^{
m th}$ term is

$$T_n = n^K \times R^n$$

You have to evaluate the series

$$S_n = T_1 + T_2 + T_3 + \dots + T_n$$

Find $S_n \mod (10^9 + 7)$.

Input Format

The first line of input contains T, the number of test cases. Each test case consists of three lines, each containing K, n and R respectively.

Output Format

For each test case, print the required answer in a line.

Constraints

 $1 \leq T \leq 10$

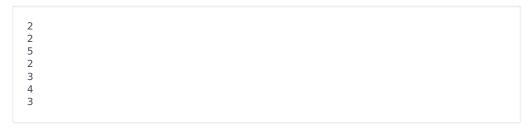
 $1 \le K \le 10^3$

 $1 \le n \le 10^{16}$

 $2 \leq R \leq 10^{16}$

 $R \bmod (10^9 + 7) \neq 1$

Sample Input



Sample Output

1146 5988

Explanation

Case 1: $1146 = 1^2 \times 2^1 + 2^2 \times 2^2 + 3^2 \times 2^3 + 4^2 \times 2^4 + 5^2 \times 2^5$

Case 2: $5988 = 1^3 \times 3^1 + 2^3 \times 3^2 + 3^3 \times 3^3 + 4^3 \times 3^4$