

# Infinity

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            3 seconds  
Memory limit:         512 megabytes

Let  $S_n$  be the set of all  $n$ -ordered permutations. For  $\sigma \in S_n$ , let  $\nu(\sigma)$  be the number of elements in the set  $\{\mu^{-1}\sigma\mu \mid \mu \in S_n\}$ .

Given a fixed integer  $k$ , you have received multiple queries of  $n$ , and for each of the values, you must compute

$$\sum_{\sigma \in S_n} \nu(\sigma)^k,$$

taken modulo 998244353.

## Input

The first line of input contains two integers  $t$  and  $k$  ( $1 \leq t \leq 10^3$ ,  $1 \leq k \leq 10^9$ ) — the number of test cases and the given constant value.

Then  $t$  lines follow. Each line contains a positive integer  $n$  ( $1 \leq n \leq 2 \cdot 10^5$ ), representing a query.

## Output

Output a total of  $t$  lines. For each query, output a single line containing an integer, representing your answer modulo 998244353.

## Examples

standard input	standard output
7 1	1
1	2
2	14
3	146
4	2602
5	71412
6	2675724
7	
8 5	2
2	738630138
10	158601508
50	770726379
250	894346889
1250	987370821
6250	445104440
31250	460384381
100000	