Problem B
Basel Problem

In 1734, the great mathematician Leonhard Euler solved the famous **Basel Problem**, which states that $\sum_{k=1}^{\infty} \frac{1}{k^2} = \frac{\pi^2}{6}$.

He also provided a generalization: let n be an **even** positive integer, then the function $\zeta(n) = \sum_{k=1}^{\infty} \frac{1}{k^n}$ is always equal to a rational multiple of π^n, i.e., $\zeta(n) = \frac{p_n}{q_n}\pi^n$ for some positive integers p_n and q_n with $gcd(p_n, q_n) = 1$.

Almost 300 years later, another great mathematician **insert your name here** found a way to compute p_n and q_n very fast, but since those numbers can be very large, he really finds $p_n \times q_n^{-1}$ *mod* 998244353 only, where q_n^{-1} is the multiplicative inverse of q_n in that modulo.

Input

The first line of input contains a single integer T ($1 \le T \le 10^5$), representing the number of test cases. Each of the following T lines contain an even positive integer n ($2 \le n \le 2 \times 10^5$).

Output

For each test case output the value of $p_n \times q_n^{-1}$ *mod* 998244353. It can be shown that under the constraints given, $q_n \not\equiv 0$ *mod* 998244353.

Input example 1	Output example 1
5 2 4 6 8 10	166374059 144190851 13732462 600319858 766467710

Notes

- $\zeta(2) = \frac{1}{6}\pi^2$
- $\zeta(4) = \frac{1}{90}\pi^4$
- $\zeta(6) = \frac{1}{945}\pi^6$
- $\zeta(8) = \frac{1}{9450}\pi^8$
- $\zeta(10) = \frac{1}{93555}\pi^{10}$