Problem F: Flurried Alice

Upon learning a new powerful skill called "Rage Rush", Alice immediately heads to her training ground to get accustomed to the ability.

The behavior of this skill is pretty unique. Assuming Alice was using this skill when there are k alive enemy Marchens, and their health points are $b_1, b_2, \ldots, b_k$ respectively (an enemy is considered "alive" if it has at least 1 health point), the following happens:

- First, one Marchen is chosen out of the k alive ones above with a probability proportional to their current health. In other words, denoting p_i as the probability that the i-th Marchen is chosen, then $p_i = \frac{b_i}{\sum_{j=1}^{k} b_j}$.
- Then, an integer in the range $[3, 5]$ is chosen, that each integer in the range has an equal chance of being chosen, and finally decreases the health points of the chosen Marchen by that chosen integer. If that Marchen happened to have fewer health points than the subtracting value, the exceeded damage will be considered wasted (i.e., not being transferred to any other Marchens).

Within the training ground, Alice has set up n dummy Marchens, with their health points being at $a_1, a_2, \ldots, a_n$ respectively, and they don't fight back so that she could train for as long as she likes.

After a while, Gretel comes over; and upon witnessing Alice's flurry upon the dummies, she gives a riddle: if Alice can only use Rage Rush as an attacking option, what is the expected amount of times she uses that skill such that all dummy Marchens will be dead?

"There is so much randomness here, how would you even tell?" — Alice turns to Gretel with a raised brow.

"Hehe... it is actually very simple." — Gretel only gives out her signature wide smile, then utters the answer right afterwards.

Can you calculate it as fast as Gretel? Find the answer modulo $998\,224\,353$.

Formally, let $M = 998\,244\,353$. It can be shown that the answer can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \not\equiv 0 \pmod{M}$. Output the integer equal to $p \cdot q^{-1} \bmod M$. In other words, output such an integer x that $0 \le x < M$ and $x \cdot q \equiv p \pmod{M}$.

Input

Each test consists of multiple test cases. The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains an integer n ($1 \le n \le 2 \cdot 10^5$) — the number of dummy Marchens.

The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^{18}$) — the number of health points each dummy Marchen has initially.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output a single integer — the expected number of Rage Rush uses from Alice to clear all her dummy Marchens, modulo $998\,244\,353$.

Sample Explanation

Denote "a takes b" as a turn with the a-th Marchen taking b damage.

Denote "a to zero" as a turn where the a-th Marchen will be dead after taking damage.

In the first test case, the initial Marchens has health points represented by the pair $(3, 5)$. There are a few scenarios of clearing all Marchens:

Scenario	**Chance of happening**
$(\underline{3},5) \xrightarrow{\text{1 to zero}} (0,\underline{5}) \xrightarrow{\text{2 takes 3}} (0,\underline{2}) \xrightarrow{\text{2 to zero}} (0,0)$	This has $\frac{3}{3+5}\cdot\frac{1}{3}=\frac{1}{8}$ chance. • "1 to zero" has $\frac{3}{3+5}$ chance. • "2 takes 3" has $\frac{1}{3}$ chance.
$(\underline{3},5) \xrightarrow{\text{1 to zero}} (0,\underline{5}) \xrightarrow{\text{2 takes 4}} (0,\underline{1}) \xrightarrow{\text{2 to zero}} (0,0)$	$\frac{3}{3+5}\cdot\frac{1}{3}=\frac{1}{8}$
$(\underline{3},5) \xrightarrow{\text{1 to zero}} (0,\underline{5}) \xrightarrow{\text{2 takes 5}} (0,0)$	$\frac{3}{3+5}\cdot\frac{1}{3}=\frac{1}{8}$
$(3,\underline{5}) \xrightarrow{\text{2 takes 3}} (\underline{3},2) \xrightarrow{\text{1 to zero}} (0,\underline{2}) \xrightarrow{\text{2 to zero}} (0,0)$	$\frac{5}{(3+5)\cdot 3}\cdot\frac{3}{3+2}=\frac{1}{8}$
$(3,\underline{5}) \xrightarrow{\text{2 takes 3}} (3,\underline{2}) \xrightarrow{\text{2 to zero}} (\underline{3},0) \xrightarrow{\text{1 to zero}} (0,0)$	$\frac{5}{(3+5)\cdot 3}\cdot\frac{2}{3+2}=\frac{1}{12}$
$(3,\underline{5}) \xrightarrow{\text{2 takes 4}} (\underline{3},1) \xrightarrow{\text{1 to zero}} (0,\underline{2}) \xrightarrow{\text{2 to zero}} (0,0)$	$\frac{5}{(3+5)\cdot 3}\cdot\frac{3}{3+1}=\frac{5}{32}$
$(3,\underline{5}) \xrightarrow{\text{2 takes 4}} (3,\underline{1}) \xrightarrow{\text{2 to zero}} (\underline{3},0) \xrightarrow{\text{1 to zero}} (0,0)$	$\frac{5}{(3+5)\cdot 3}\cdot\frac{1}{3+1}=\frac{5}{96}$
$(3,\underline{5}) \xrightarrow{\text{2 takes 5}} (\underline{3},0) \xrightarrow{\text{1 to zero}} (0,0)$	$\frac{5}{(3+5)\cdot 3}=\frac{5}{24}$

In total, the expected amount of times Alice will uses the skill is:

$$3\cdot\frac{1}{8}+3\cdot\frac{1}{8}+2\cdot\frac{1}{8}+3\cdot\frac{1}{8}+3\cdot\frac{1}{12}+3\cdot\frac{5}{32}+3\cdot\frac{5}{96}+2\cdot\frac{5}{24}=\frac{8}{3}$$

It can be seen that $665\,496\,238\cdot 3=1\,996\,488\,714=2\cdot 998\,244\,353+8$, or $665\,496\,238\cdot 3\equiv 8 \pmod{998\,244\,353}$, thus we output $665\,496\,238$ as the answer for this test case.

Sample Input 1

```
3
2
3 5
3
3 4 5
5
1 4 2 9 5
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Sample Output 1

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665496238
4
665496243
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