

7537 Samosa Bhai and his Courier Company

Samosa Bhai got tired of the difficult tasks given by CodeChef along with meagre salary being paid to him. So he moves to Aloo uncle's village and opens a courier company there. In the village, everyone knows Aloo uncle and Kachori Aunty, so everyone sends their gifts using Samosa Bhai's courier company only.

There are N houses in a row in the village. On New Year's Eve, each house sends a gift to all the other houses. The distance between two houses situated at positions x and y in the row is $|x - y|$. Samosa Bhai's courier company charges d^k rupees for each delivery, where d is the distance between the 2 houses.

Everyone chose Samosa Bhai's company because of Aloo uncle and Kachori aunty. So he decides to give them the amount of money earned by him modulo $1000000007(10^9 + 7)$. You need to compute this amount.

Input

- The first line of input contains an integer T denoting the number of test cases. The description of T test cases follows.
- The first line of each test case contains 2 integers — N and k — denoting the number of houses and the exponent k , respectively. The second line contains N space-separated integers A_1, A_2, \dots, A_N denoting the positions of the houses.

Output

- For each test case, output a single line with the amount given to Aloo uncle and Kachori aunty by Samosa Bhai.

Constraints:

- $2 \leq N \leq 10^5$
- $0 \leq k \leq 100$
- $0 \leq A_i \leq 1000000006$
- The sum of N over all test cases will be at most 100000
- 2 houses can be at the same position

Explanation:

Example case 1. House 1 sends a gift to House 2 with cost $(|2 - 7|)^2$ and house 2 sends a gift to house 1 with cost $(|7 - 2|)^2$, for a total cost of 50

Example case 3. The cost for gift from house with index 1 to house with index 2 is $2^2 = 4$, from houses 1 to 3 is 1, from houses 2 to 3 is 1. Taking into account the gifts sent the other way (from 2 to 1, 3 to 1 and 3 to 2), the total cost is $4 + 1 + 1 + 4 + 1 + 1 = 12$

Sample Input

```
5
2 2
7 2
2 3
7 2
3 2
1 3 2
10 2
1 2 3 4 5 6 7 8 9 10
10 10
1 2 3 4 5 6 7 8 9 10
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Sample Output

```
50
250
12
1650
558199159
```