3316. Find the Sum of Subsequence Powers

Difficulty : Hard

https://leetcode.com/problems/find-the-sum-of-subsequence-powers

You are given an integer array `nums` of length `n`, and a **positive** integer `k`.

The **power** of a subsequence is defined as the **minimum** absolute difference between **any** two elements in the subsequence.

Return *the **sum** of **powers** of **all** subsequences of* `nums` *which have length **equal to*** `k`.

Since the answer may be large, return it **modulo** $10^9 + 7$.

Example 1:

Input: nums = [1,2,3,4], k = 3

Output: 4

Explanation:

There are 4 subsequences in `nums` which have length 3: `[1,2,3]`, `[1,3,4]`, `[1,2,4]`, and `[2,3,4]`. The sum of powers is `|2 - 3| + |3 - 4| + |2 - 1| + |3 - 4| = 4`.

Example 2:

Input: nums = [2,2], k = 2

Output: 0

Explanation:

The only subsequence in `nums` which has length 2 is `[2,2]`. The sum of powers is `|2 - 2| = 0`.

Example 3:

Input: nums = [4,3,-1], k = 2

Output: 10

Explanation:

There are 3 subsequences in `nums` which have length 2: `[4,3]`, `[4,-1]`, and `[3,-1]`. The sum of powers is `|4 - 3| + |4 - (-1)| + |3 - (-1)| = 10`.

Constraints:

- `2 <= n == nums.length <= 50`
- -10^8 `<= nums[i] <=` 10^8
- `2 <= k <= n`