You are given an integer array nums. The **range** of a subarray of nums is the difference between the largest and smallest element in the subarray.

Return *the* ***sum of all*** *subarray ranges of* nums*.*

A subarray is a contiguous **non-empty** sequence of elements within an array.

**Example 1:**

Input: nums = [1,2,3]  
Output: 4  
Explanation: The 6 subarrays of nums are the following:  
[1], range = largest - smallest = 1 - 1 = 0   
[2], range = 2 - 2 = 0  
[3], range = 3 - 3 = 0  
[1,2], range = 2 - 1 = 1  
[2,3], range = 3 - 2 = 1  
[1,2,3], range = 3 - 1 = 2  
So the sum of all ranges is 0 + 0 + 0 + 1 + 1 + 2 = 4.

**Example 2:**

Input: nums = [1,3,3]  
Output: 4  
Explanation: The 6 subarrays of nums are the following:  
[1], range = largest - smallest = 1 - 1 = 0  
[3], range = 3 - 3 = 0  
[3], range = 3 - 3 = 0  
[1,3], range = 3 - 1 = 2  
[3,3], range = 3 - 3 = 0  
[1,3,3], range = 3 - 1 = 2  
So the sum of all ranges is 0 + 0 + 0 + 2 + 0 + 2 = 4.

**Example 3:**

Input: nums = [4,-2,-3,4,1]  
Output: 59  
Explanation: The sum of all subarray ranges of nums is 59.

**Constraints:**

* 1 <= nums.length <= 1000
* -109 <= nums[i] <= 109

**Follow-up:** Could you find a solution with O(n) time complexity?