An array is *monotonic* if it is either monotone increasing or monotone decreasing.

An array A is monotone increasing if for all i <= j, A[i] <= A[j].  An array A is monotone decreasing if for all i <= j, A[i] >= A[j].

Return true if and only if the given array A is monotonic.

**Example 1:**

**Input:** [1,2,2,3]

**Output:** true

**Example 2:**

**Input:** [6,5,4,4]

**Output:** true

**Example 3:**

**Input:** [1,3,2]

**Output:** false

**Example 4:**

**Input:** [1,2,4,5]

**Output:** true

**Example 5:**

**Input:** [1,1,1]

**Output:** true

**Note:**

1. 1 <= A.length <= 50000
2. -100000 <= A[i] <= 100000