# 360. Sort Transformed Array Premium

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Given a **sorted** integer array `nums` and three integers `a`, `b` and `c`, apply a quadratic function of the form `f(x) = ax^2 + bx + c` to each element `nums[i]` in the array, and return *the array in a sorted order.*

**Example 1:**

> **Input:** `nums = [-4,-2,2,4], a = 1, b = 3, c = 5`
> **Output:** `[3,9,15,33]`

**Example 2:**

> **Input:** `nums = [-4,-2,2,4], a = -1, b = 3, c = 5`
> **Output:** `[-23,-5,1,7]`

**Constraints:**

- `1 <= nums.length <= 200`
- `-100 <= nums[i], a, b, c <= 100`
- `nums` is sorted in **ascending** order.

**Follow up:** Could you solve it in `O(n)` time?

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Seen this question in a real interview before? 1/5

Yes No

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## Hint 1

x^2 + x will form a parabola.

## Hint 2

Parameter A in: A * x^2 + B * x + C dictates the shape of the parabola.
Positive A means the parabola remains concave (high-low-high), but negative A inverts the parabola to be convex (low-high-low).

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