Absolutely Sorted Array

Filename: `absolute`

When Atharva talks about numbers, he refers to a number as "bigger" than another if its absolute value is greater than the other number's absolute value. This definition causes confusion as -2 is bigger than 1, although it is less than 1, but it makes sense in his head. Atharva then gave Sharon an array of integers and asked him to sort them in nondecreasing order of "bigness", and if two numbers have the same "bigness", then compare them by their actual value. For example, the array [1, 0, 2, -2] would become [0, 1, -2, 2]. Sharon has no time to play Atharva's weird games so you will have to create a program to sort the array for him.

The Problem:

Given an array, sort it in nondecreasing order of absolute value, breaking ties by putting negative values at lower indices.

The Input:

The first line of the input file begins with a single, positive integer, t, representing the number of arrays. For each array, two lines follow. The first contains a single integer $1 \leq n \leq 100{,}000$ representing the number of arrays. The second line contains n integers $|a[i]| \leq 10^9$, representing the elements of the array.

The Output:

For each test case, output a single line containing "`Array #i: `" without the quotes, where `i` is the number of the array, followed by n space-separated integers, the elements of the sorted array. Make sure there are no trailing spaces.

Sample Input:

```
3
4
1 0 2 -2
7
1 -2 -3 4 5 6 -6
1
40
```

Sample Output:

```
Array #1: 0 1 -2 2
Array #2: 1 -2 -3 4 5 -6 6
Array #3: 40
```