Derivation Sequence

Consider a sequence of K elements; we can calculate its difference sequence by taking the difference between each pair of adjacent elements. For instance, the difference sequence of {5,6,3,9,-1} is {6-5,3-6,9-3,-1-9} = {1,-3,6,-10}. Formally, the difference sequence of the sequence a[1], a[2], ... , a[k] is b[1], b[2], ... , b[k-1], where b[i] = a[i+1] – a[i]. The derivative sequence of order N of a sequence A is the result of iteratively applying the above process N times. For example, if A = {5,6,3,9,-1}, the derivative sequence of order 2 is: {5,6,3,9,-1} -> {1,-3,6,-10} -> {-3-1,6-(-3),-10-6} = {-4,9,-16}. You will be given k (1<=k<=20) and N (0<=N<=k-1) followed by k integers. Your task is to write a program to output a sequence representing the derivative sequence of order N of a.

Example

Input:
5 1
5 6 3 9 -1
5 2
5 6 3 9 -1
5 4
5 6 3 9 -1
8 3
4 4 4 4 4 4 4 4
2 0
-100 100

Output:
1 -3 6 -10
-4 9 -16
-38
0 0 0 0 0
-100 100