Problem Statement

Given 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 a sequence **a** as a int[] and the order **n**. Return a int[] representing the derivative sequence of order **n** of **a**.

Definition

Class: DerivativeSequence
Method: derSeq
Parameters: int[], int
Returns: int[]
Method signature: int[] derSeq(int[] a, int n)
(be sure your method is public)

Notes

- The derivative sequence of order 0 is the original sequence. See example 4 for further clarification.

Constraints

- **a** will contain between 1 and 20 elements, inclusive.
- Each element of **a** will be between -100 and 100, inclusive.
- **n** will be between 0 and K-1, inclusive, where K is the number of elements in **a**.

Examples

0)

    {5,6,3,9,-1}
    1
    Returns: {1, -3, 6, -10 }
    The first example given in the problem statement.

1)

    {5,6,3,9,-1}
    2
    Returns: {-4, 9, -16 }
    The second example given in the problem statement.

2)

```
{5,6,3,9,-1}
4
Returns: {-38 }
```

3)

```
{4,4,4,4,4,4,4,4}
3
Returns: {0, 0, 0, 0, 0 }
```

After 1 step, they all become 0.

4)

```
{-100,100}
0
Returns: {-100, 100 }
```