Quiz 7: Polynomial

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1 Description

In mathematics, a polynomial is an expression of finite length constructed from variables and constants, using only the operations of addition, subtraction, multiplication, and non-negative integer exponents. For example, $4x^2 - x + 5$ is a polynomial, but $x^2 + x + 4/x$ is not, because its third term involves division by the variable x. In this problem, your job is to implement the polynomial addition, polynomial multiplication, polynomial function derivation, polynomial function definite integral in PolySeq class.

2 Specification

You must implement the PolySeq class with the following public member functions:

PolySeq(int ,int *)	Constructor. The parameters mean term and coefficient respectively.
PolySeq( )	Constructor with no parameter.
PolySeq(int n)	Constructor. The parameters mean term
PolySeq Add(PolySeq)	Return the sum of two polynomials.
PolySeq Multiply(PolySeq)	Return the product of two polynomials.
PolySeq Derivative( )	Return the derivative of the polynomial function.
double Integral(int ,int);	pReturn the result of the definite integral of the polynomial function. The parameters mean the lower bound and the upper bound of the integral respectively.
Void print()	Print the coefficient of polynomial

For example: P1 = $6x + 1$,p2 = $3x^2 + 3x + 2$

Functions	Mathematical expression
P1. Add(P2)	$(6x + 1) + (3x^2 + 3x + 2)$
PolySeq(int n)	$(6x + 1) * (3x^2 + 3x + 2)$
PolySeq Add(PolySeq)	$(6x + 1)'$
PolySeq Multiply(PolySeq)	$\int_2^3 6x + 1.$

3 Input

The first line contains an integer n1 indicating the number of terms of the first polynomial. The second line contain the elements of arrays c1[ ], where c1[i] ($0 <= i < n1$) are coefficient of the first polynomial. c1[i] are in the range of integer value and each number is separated by a space. The third line contains an integer n2 indicating the number of terms of the second polynomial. The fifth line contain the elements of arrays c2[ ], where c2[i] ($0 <= i < n2$) are coefficient of the second polynomial respectively. Both c2[i] are in the range of integer value and each number is separated by a space.

4 Output

The output should print the following integers in order: The sum of the first and the second polynomials. The product of the first and the second polynomials. The derivative of the first polynomial. The definite integral of the second polynomial with parameter lower bound x1 and upper bound x2.

Sample Input	Sample Output
2 1 1 3 9 -4 1	9 -3 2 9 5 -3 1 1 48

5 Restriction

1. The code you submitted should only contain the PolySeq class (with only "PolySeq.hpp header file and no function).
2. In the question, the ¡iostream¿ is the only header file allowed.