1  (5 points)

Let A[1..n] be a sorted array of n distinct numbers. Write an efficient algorithm, Find(A, n, k), that finds a given value k in A[1..n]. It should return the index of the found element; for example, if A = \{1,2,5,6,9\} and k = 5, then the returned index is 3, which means that k = A[3]. If the array does not include k, the algorithm should return 0.

2  (5 points)

Prove the following equality:

\[(1 + 2 + 3 + 4 + ... + n)^2 = 1^3 + 2^3 + 3^3 + 4^3 + ... + n^3.\]