Analysis of Algorithms: Assignment 1

Due date: January 8 (Wednesday)

Problem 1 (5 points)
Let $A[1..n]$ be a *sorted* array of n distinct numbers. Write an efficient algorithm BINARY-SEARCH(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 $A = \langle 1, 3, 4, 6, 9 \rangle$ and $k = 6$, then the returned index is 4, which means that $k = A[4]$. If the array does not include k, the algorithm should return 0.

Problem 2 (5 points)
Prove or disprove that, if n is a natural number, then $n^3 - n$ is divisible by 6.