Algorithms (COT 6405): Assignment 1

Due date: August 28 (Thursday)

Problem 1 (5 points)
Prove or disprove that, if n is a natural number, then $n^3 - n$ is divisible by 6.

Problem 2 (5 points)
Consider an array $A[1..n]$ whose elements are distinct integer numbers, and describe an algorithm that finds the largest and second largest elements of this array using at most $(n + \lceil \log_2 n \rceil)$ comparisons. Your algorithm should not use the "minimum," "maximum," or "absolute value" operations, which involve implicit comparisons.