Assignment 7

Due: March 10, 2020

Your solutions must be typed (preferably typeset in $L^{A}T_{E}X$) and submitted as a hard-copy at the beginning of class on the day its due.

Problem 1: Partition [10 points] Show that the following problem is NP-Complete (Hint: reduce from SubsetSum).

PARTITION: Given a finite set A and a positive integer s(a) associated with each $a \in A$, is there a subset $A' \subseteq A$ such that $\sum_{a \in A'} s(a) = \sum_{a \in A-A'} s(a)$?

Problem 2: Fire Houses [10 points] Show that the following problem is NP-Complete (Hint: reduce from 3-SAT or Vertex Cover).

FIREHOUSES: Given an undirected graph G with positive integer distances on the edges, and two integers f and d, is there a way to select f vertices on G on which to locate firehouses, so that no vertex of G is at distance more than d from a firehouse?