CSC341 Lab 11B

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Academic Honesty

Written Sources Used:

Michael Sipser - Introduction to the Theory of Computation

Help Obtained:

None

Question 1

(1) Assign specific truth values in P and check if they evaluate to True. Evaluating P with the specific truth values is polynomial in the size of P, we can conclude that A_1 is in NP.

(2) A subset of S with the elements that sum to t can be used to verify A_2. Checking each element's presence in S and computing their sum takes polynomial time relative to $|S|$ and the subset, which concludes that A_2 is in NP.

(3) Checking if V' covers all the edges involves checking each edge against the vertices in V' which takes up to polynomial time to $|E|$, which concludes that A_3 is in NP.

Question 2

From the $CLIQUE$, we take the graph G and form a new graph J which is a complete graph of k vertices. If the $\langle G, k \rangle$ is an instance that is true for the $CLIQUE$, that means there exists a subset of G that forms a subgraph isomorphic to J. This makes $\langle G, J \rangle$ a instance that is true for ISO, since the subset of G that forms the k-clique is isomorphic to J.