List of NP-complete problems

1. Clique:

Given graph , a positive integer .

Q: Does there exist a clique of size or more in ?

1. Sum of subsets:

Given a set of integers , an integer .

Q: Is there a subset of the integers whose sum is ?

1. Hamiltonian cycle:

Given graph , does there exist a Hamiltonian cycle (a cycle that contains every vertex exactly once) of G?

1. Independent Set:

Given graph , and a positive integer .

Q: Does there exist an independent set of size or more in

IS: such that for any , .

1. TSP: Given a weighted graph does there exist a Hamiltonian cycle whose total edge weights are at most ?
2. Vertex cover:

Given graph , and a positive integer .

Q: Is there a vertex cover of size or less for ; i.e., a subset with s.t for each edge , at least one of and is in ?

1. Dominating set:

Given graph , and a positive integer .

Q: Is there a dominating set of size such that for every vertex there is a such that ?