Problems: Intractability

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November 8, 2024

1. Design a polynomial time algorithm for 2SAT problem.
2. Give an example of a problem which is NP-hard but unlikely to be NP-complete.
3. Show that CNF-SAT many-to-one reduces to 3SAT.
4. Show that 3SAT many-to-one reduces to Vertex Cover.
5. Show that Directed Hamiltonian Cycle many-to-one reduces to Directed Hamiltonian Path.
6. Show that Vertex Cover many-to-one reduces to Subset Sum.
7. Show that Subset Sum many-to-one reduces to Partition.
8. Show that Vertex Cover many-to-one reduces to Hitting Set.
9. Show that CNF-SAT many-to-one reduces to 3SAT.
10. Show that 3 Dimensional Matching many-to-one reduces to Set Cover.
11. Show that Clique many-to-one reduces to Vertex Cover.
12. Prove that the Traveling Salesman problem is NP-complete.
13. Show that 3SAT many-to-one reduces to 3-Colorability of graphs.
14. Show that Subset Sum many-to-one reduces to Knapsack.
15. Show that Subset Sum many-to-one reduces to Partition.
16. Show that Hamiltonian Cycle many-to-one reduces to Hamiltonian Path.
17. Show that DNF-SAT is polynomial time solvable.
18. Show that Subgraph Isomorphism is NP-complete.
19. Show that dominating set in NP-complete.