1. Give a polynomial time bounded algorithm for determining if a Boolean formula in conjunctive normal form with two literals per clause is satisfiable.

2. Write out a clear proof that undirected graph three colorability is NP-complete. Assume that 3-CNF satisfiability is NP-complete.

3. In the directed subgraph below prove that any path that traverses all vertices must enter and leave the subgraph in the same column. Note that the path may enter the subgraph more than once.