Tutorial Sheet 6

1. Show that the Halting problem is not \( \text{NP} \)-complete.

2. Let HALF-CLIQUE be the set of graphs \( G \) on \( n \) vertices such that \( G \) contains a clique of size at most \( n/2 \). Show that HALF-CLIQUE is \( \text{NP} \)-complete.

3. The 100-Clique problem asks whether a given graph has a clique of size 100. Show that if 100-Clique is \( \text{NP} \)-complete, then \( \text{NP} = \text{P} \).

4. Show that the 2-SAT problem can be solved in polynomial time.

5. Let Double-SAT be the language of CNF formulae which have at least 2 satisfying assignments. Show that Double-SAT is \( \text{NP} \)-complete.