Problems

1. Longest Path

   Given a graph $G$ and a variable $k$, the longest path problem asks if $G$ contains a simple path which visits at least $k$ vertices of $G$. Prove that longest path is NP-Complete.

2. Hamiltonian Path

   Given a graph $G$, a Hamiltonian path is a path which visits every vertex exactly once. Prove that deciding if a graph has a Hamiltonian path is NP-Complete.

3. Subgraph Isomorphism

   Given two graphs $G$ and $H$, the subgraph isomorphism problems asks if $G$ has contains an exact copy of $H$. Prove that subgraph isomorphism is NP-Complete.