1. **Isomorphisms**

   Show that there are eleven nonisomorphic simple graphs on four vertices.

   > **Solution:**

2. **Euler's Formula**

   A soccer ball is a convex polyhedron whose faces are either hexagons or pentagons. Prove that a soccer ball has exactly 12 pentagonal faces.

   > **Solution:**

3. **Graph Induction**

   A tournament of n vertices is a complete directed graph with n vertices. Prove that there always exists a directed path that visits each vertex in the tournament exactly once.

   > **Solution:**