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:**