

1. Show that every automorphism of a tree fixes a vertex or an edge.
2. Show that a graph is bipartite if and only if every **induced** cycle has even length.
3. Prove or disprove that a graph is bipartite if and only if no two adjacent vertices have the same distance from any other vertex.
4. Prove or disprove that every connected graph contains a walk that traverses each of its edges exactly one in each direction.
5. Prove that if X is a topological minor of Y and Y is a topological minor of Z , then X is a topological minor of Z .
6. Prove that if G contains a walk from vertex u to vertex v , then it must contain a uv -path.