

Homework 3

- 3.1) Suppose that every vertex of a loopless graph G has degree at least 3. Prove that G has a cycle of even length. (Hint: consider a maximal path)
- 3.2) Prove that every connected nontrivial graph has a closed walk which traverses each edge exactly twice.
- 3.3) For each statement below, determine whether it is true for every connected simple graph G that is not a complete graph.
- Every vertex of G belongs to an induced subgraph isomorphic to P_3 .
 - Every edge of G belongs to an induced subgraph isomorphic to P_3 .