

1. Problems 9.2, 9.3, 9.21, 9.30
2. Let M be a matching in a bipartite graph G . Show that if M contains fewer edges than some other matching in G , then G contains an alternating path with respect to M which ends in an unmatched edge (and which can thus be used to obtain a larger matching than M). [Try looking at the symmetric difference of two sets.]
3. Show, via a counterexample, that the statement of Hall's theorem fails for infinite graphs.
4. Give an example of a hamiltonian graph whose degree sequence fails the conditions of Chvátal's theorem.