Math 301 Homework

Mary Radcliffe

Due 1 December 2017

Complete the following problems. Fully justify each response.

1. Complete problems 6, 8, 9, 16, 21 from Applied Combinatorics in Section 6.10.

2. A *vertex cover* in a graph is a set of vertices S such that for every edge $e \in E$, at least one of the endpoints of e is in S.

   König's Theorem states the following:

   > If G is a bipartite graph, then the size of a minimum vertex cover in G is equal to the size of a maximum matching in G.

   Show that Hall's Theorem, König's Theorem, and Dilworth's Theorem are equivalent.