Graph Theory

Tutorial/Homework 4

August 30, 2012

Tutorial 4

1. Prove that a k-regular bipartite graph has no cut edges.
2. Let G be a k-connected graph, and let S, T be disjoint subsets of V(G) with size at least k. Prove that G has k pairwise disjoint S,T paths.
3. Use Menger's theorem to prove that $\kappa(G) = \kappa'(G)$ when G is 3-regular.

Homework 4

1. Let v be a vertex of a 2-connected graph G. Prove that v has a neighbor u such that G – u – v is connected.
2. Prove that a simple connected graph with an even number of edges can be decomposed into paths with two edges (P_3).