Assignment 4, Selected Topics in Combinatorial Optimization, Summer term 2014

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Exercise 4.1 (10 Points) Let $G = (V, E)$ be a cubic 2-vertex-connected graph (i. e., each vertex has a degree of exactly 3 and G has no cut vertex). Show that G has a perfect matching M such that removing M results in a triangle free 2-factor (that is, a 2-factor without cycles of length 3).

Exercise 4.2 (10 Points) Let $G = (V, E)$ be a graph with $|V| \geq 2$ with a Gomory-Hu tree $T = (V, F)$. Show that there is an edge $e = \{u, v\} \in F \cap E$ such that v is a leaf in T (i. e., a degree one vertex).