

## Graph Theory, Homework 3

**Due Thursday, February 27**

1. Let  $G$  be a connected (simple) graph and  $v$  any vertex in  $G$ . Show that there exists a spanning tree of  $G$  containing every edge incident to  $v$ .
2. Let  $G$  be a connected (simple) graph and suppose that  $G$  contains a cycle. Show that for every edge  $e$  in the cycle, there is a spanning tree of  $G$  which does not contain the edge  $e$ .