Discrete Mathematics 21-228: Spring 2002
Homework.
HW9 due Monday 4/15/02

Q1: A connected graph is called unicyclic if it has exactly one cycle. Prove that G is unicyclic if and only if it satisfies any two of the following properties.
(1). $G$is connected.
(2). G has one and only one cycle.
(3). The number of vertices of G equals the number of edges.

Q2: Let T_1 and T_2 be spanning trees of a graph G and let e be an edge of T_1 not in T_2. Show that there is a spanning tree T_3 of G containing e and all but one edge from T_2.

Q3: Show that if G is connected and each degree in G is even, then, for every $v \in V$, $G - v$ has at most $d(v)/2$ components.