

## Homework 5

*Lecturer: Ronitt Rubinfeld**Due Date: December 29, 2014*

Turn the following problem in:

1. Assume that your computational model is such that a query returns a single bit. In such a model, show that any algorithm making  $q$  queries can be made into a *nonadaptive* (i.e., where the queries do not depend on the results of any previous queries) tester that uses only  $2^q$  queries.
2. (Canonical forms for graph property testers for the adjacency matrix model). Define a graph property to be a property that is preserved under graph isomorphism – i.e., if  $G$  has the property and  $G'$  is isomorphic to  $G$ , then  $G'$  must also have the property. Show that any adaptive algorithm for property testing which makes  $q$  queries, can be made nonadaptive algorithm using only  $O(q^2)$  queries.