1077-05-1229 **Simon Mark Smith** (smsmit13@syr.edu), **Thomas W. Tucker** (ttucker@colgate.edu) and **Mark E. Watkins*** (mewatkin@syr.edu), Syracuse University, Mathematics Department, 215 Carnegie, Syracuse, NY 13244-1150. *Distinguishability of Infinite Groups, Graphs, and Graph Products.*

The *distinguishing number* of a group G of permutations of a set V is the least number of cells in a partition of V such that only the identity element of G fixes setwise every cell of the partition. For $\alpha \in V$, an orbit of the point stabilizer G_α is called a *suborbit* of G. The *distinguishing number* of a graph Γ is the distinguishing number of its full automorphism group acting on $V(\Gamma)$.

We prove that every connected primitive graph with infinite diameter and countably many vertices has distinguishing number 2. Consequently, all infinite, connected, primitive, locally finite graphs are 2-distinguishable; so, too, is any infinite primitive group with finite suborbits. We also show that all denumerable vertex-transitive graphs having a cut vertex and all Cartesian products of connected denumerable graphs of infinite diameter have distinguishing number 2. All of these results follow directly from a versatile lemma which we call The Distinct Spheres Lemma. Determining the distinguishing number of other graph products is in progress. (Received September 18, 2011)