

1116-VF-1523

Yijin Wei* (ywei@smith.edu), 1 Chapin Way Unit 8306, Northampton, MA 01063, **Ben Baumer** (bbaumer@smith.edu), Clark Science Center, 44 College Lane, Northampton, MA 01063, and **Gary S. Bloom** (not_available@email.com). *The Smallest Non-autograph*.

Suppose that G is a simple, vertex-labeled graph and that S is a multiset. Then if there exists a one-to-one mapping between the elements of S and the vertices of G , such that edges in G exist if and only if the absolute difference of the corresponding vertex labels exist in S , then G is an *autograph*, and S is a *signature* for G . While it is known that many common families of graphs are autographs, and that infinitely many graphs are not autographs, a non-autograph has never been exhibited. In this paper, we identify the smallest non-autograph: a graph with 6 vertices and 11 edges. Furthermore, we demonstrate that the infinite family of graphs on n vertices consisting of the complement of two non-intersecting cycles contains only non-autographs for $n \geq 8$. (Received September 20, 2015)