

Department of Mathematics, BGU

Logic, Set Theory and Topology

On Tuesday, November ,17 2015

At 12:15 – 13:40

In Math 101-

Mati Rubin (Ben-Gurion University of the Negev)

will talk about

On the reconstruction of the action of a clone from its algebraic structure

Abstract: Yonah Maissel and Matatyahu Rubin Ben Gurion University, Beer Sheva, Israel Ralph McKenzie proved that if G is a group of permutations of a set A with cardinality different from 6 and 1 then the action of G on A can be recovered from the group G using first order formulas. The analogous problems for semigroups of functions from a set A to itself and for clones on A have not been considered (so it seems). I shall present four analogues of McKenzie's theorem. Here is one of them. Theorem :1 Let A be a set whose cardinality is different from 6 and 1 and let S be a semigroup of functions from A to A containing all transpositions of A . Then the action of S on A can be recovered from the algebraic structure of the semigroup S using first order formulas. A function f from A to A is called a semi-transposition, if there are distinct $a, b \in A$ such that $f(a) = b$, and for every $c \in A$: if $c \neq a$, then $f(c) = c$. Theorem :2 Let A be a set whose cardinality different

from 1 and let S be a semigroup of functions from A to A containing all semi-transpositions of A . Then the action of S on A can be recovered from the algebraic structure of the semigroup S using first order formulas. Theorem 3 The analogues of Theorems 1 and 2 for clones are also true. I shall present several open questions both for semigroups of functions and for clones.