

1096-13-1755

Lacey Johnson* (johns41a@dukes.jmu.edu), 1419 Aquia Drive, Stafford, VA 22554, and
Elizabeth Arnold. *K-potent Groebner bases and Sudoku.* Preliminary report.

Sudoku can be described as a system of polynomials which can then be solved using Groebner basis techniques. A Boolean idempotent approach ($x^2 = x$) restricts degree growth of intermediate polynomials, but increases the number of variables. We use a k-potent approach ($x^k = x$) allowing each variable to take on k values. The approach restricts degree growth, but minimizes the number of variables. Preliminary results show the k-potent approach produces the fastest results. (Received September 16, 2013)