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Vadim Ponomarenko\* (vadim@sciences.sdsu.edu), Department of Mathematics and Statistics, 5500 Campanile Dr., San Diego, CA 92182, and Natalie Selinski. The Probability that Two Semigroup Elements Commute Can Be Anything.

The commuting probability of a semigroup with n elements is defined as the number of pairs of semigroup elements (x, y) with xy = yx, divided by  $n^2$ . It is previously known that these probabilities are dense in (0, 1], for various semigroups. We extend this result to show that these probabilities are in fact all rational numbers in (0, 1]. (Received September 10, 2009)