# COMPUTATION OF THE TRANSFORMATION SEMIGROUPS ON THREE LETTERS

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Let H denote a set with three elements, and $T_3$ the full transformation semigroup on $X$, i.e. $T_3$ consists of the twenty-seven self maps of $X$ under functional composition. A transformation semigroup (briefly a $\tau$-semigroup) on three letters is an ordered pair $(X, S)$, where $S$ is any subsemigroup of $T_3$.

In [1] the notion of an invariant mean for general $\tau$-semigroups was formulated and some basic results established. In connection with that study, the problem of computing all the $\tau$-semigroups on three letters arose; it was felt that this collection would provide insight and examples as a basis for interesting further studies.

A program for computing the $\tau$-semigroups on three letters was constructed, and the final results obtained on a digital computer. There are 1,298 $\tau$-semigroups on three letters, many, of course, obtained simply by adjoining the identity to another, and they can be grouped naturally into classes, usually of three or six, by the permutations of three letters. The results are too long to append here but may be obtained by writing to Professor Carroll O. Wilde, Department of Mathematics, Naval Postgraduate School, Monterey, California 93940, U.S.A.

## Reference

[1] C. Wilde, T. Jayachandran, 'Amenable transformation semigroups', *J. Australian Math. Soc.* V. XII, Part 4 (1971), 502–510.

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