

1056-G1-198

**Mark Anderson Miller\*** (millerr@marietta.edu), Marietta College, Department of Mathematics & Computer Science, Marietta, OH 45750. *Matrices of Sequences: Recurrence and Computation.*

One difficulty in teaching a first course in linear algebra relates to examples. It can sometimes be difficult to come up with non-sparse matrices that are large enough to be interesting but still manageable for in-class computation of rank, eigenvalues, fundamental subspaces, etc.

In this note we consider families of matrices whose entries are successive members of well known sequences (e.g., Fibonacci). We examine ways in which recurrence identities can be used to simplify calculations when working with these matrices. Along the way we also consider ways in which software packages, such as *Mathematica*, can be used to help us identify patterns when working with these matrices. In the end, we hope that such examples help students to see how one can use technology to gain insight and then use that insight to calculate results the old fashioned way: on a napkin with a pencil! (Received August 14, 2009)