1056-G1-2002   **Elyn Rykken*** (`elrykken@muhlenberg.edu`), Muhlenberg College, Allentown, PA , and
Maureen Carroll, University of Scranton, Scranton, PA. *Transitioning to a Laguerre Basis.*

Change of basis problems, in particular those between polynomial spaces, are a staple of every linear algebra textbook. Often one is asked to change from the the standard basis $\{1, x, x^2, x^3, ..., x^n\}$ to some other basis, perhaps $\{1, 1-t, 2-4t+t^2, 6-18t+9t^2-t^3\}$ when the space is $\mathbb{P}_3$. The new basis given here consists of Laguerre polynomials, an example of the broader category of orthogonal polynomials. As our students often wonder why we are interested in such problems, our quest to provide context led us to discover the rich history of these polynomials. They arise in many areas of mathematics and produce a wealth of diverse applications. For our talk we will present some background material and a peculiar fact about Laguerre polynomials. (Received September 22, 2009)