1125-15-442 **Alan C. Krinik*** (ackrinik@cpp.edu), **Uyen Nguyen**, **Ali Oudich**, **Pedram Ostadhassanpanjehali** and **Ryan Kmet**. *Exploring a Class of Finite, Tridiagonal, Stochastic Matrices.*

We begin by applying some nice results of Kouachi (2008) that characterize the general form of eigenvalues for two different classes of finite, tridiagonal, stochastic matrices having q on the lower diagonal and p on the upper diagonal with p, q ¿ 0 and p + q ¡ 1.

•We first consider an absorbing birth-death Markov chain having state space {0,1,2,...,H} where states 0 and H are absorbing states and states 1,2,3,...,H-1 each have constant one-step (nonzero) transition probabilities: p for going up one step, q for going down one step and r the chance of returning to the same state in one step. Formulas for the n-step transition probabilities and the finite-time gambler's ruin probability are presented and discussed.

•Next, we consider a recurrent birth-death Markov chain having state space {0,1,2,...,H} where states 1,2,3,...,H have nonzero probability q of going down by one step and states 0,1,2,3,...,H-1 have nonzero probability p of going up by one step. We again assume p + q ¡ 1 Formulas for the n-step transition probabilities are presented and discussed when H is odd.

Further generalizations and applications are discussed as time allows. (Received September 02, 2016)