1067-39-195 **Mojtaba Moniri*** (m-moniri@wiu.edu), Department of Mathematics, Western Illinois University, Macomb, IL 61455. *Systems of Difference Equations, Oscillations, and Sturmian Sequences.* Preliminary report.

We consider certain matrix difference equations, where the eigenvalues of the 2×2 transition matrix are distinct. As usual, diagonalization gives the solution involving (the real and imaginary parts of) powers of an eigenvalue λ. Whether the argument $\alpha > 0$ of λ is an irrational multiple of π and whether $|\lambda| > 1$, $= 1$, or < 1, govern the type of long-term behavior. Various cases are illustrated when the starting values compare differently with the equilibrium values. Plane quadrants where each component of the solution is increasing/decreasing and is greater/less than its counterpart in the equilibrium are identified. Actually when both starting values are different from such counterparts, the quadrants are obtained from the ordinary ones via a certain rotation. These are implied by the Beatty sequence $\lfloor n\alpha \rfloor$, and in the latter case by the more general Sturmian sequence $\lfloor \gamma + n\alpha \rfloor$, $n \in \mathbb{N}$, where γ is described. Anyone who ever built numerical solutions to such systems and wondered why, for some k, they oscillated every k or $k-1$ terms, now sees how k relates to α. (Received July 31, 2010)