Boundedness of Solutions to Reciprocal Max-Type Difference Equations

Abstract

We investigate the boundedness of positive solutions of the reciprocal max-type difference equation

$$x_n = \max\left\{ \frac{A^1_{n-1}}{x_{n-1}}, \frac{A^2_{n-1}}{x_{n-2}}, \ldots, \frac{A^t_{n-1}}{x_{n-t}} \right\}, \quad n = 1, 2, \ldots,$$

where, for each value of i, the sequence $\{A^i_n\}$ of positive numbers is periodic with period p_i. We give sufficient conditions on the p_i's for all solutions to be bounded. This work complements the work by Bidwell and Franke, who showed that if every positive solution of our equation is *bounded*, then every positive solution is also eventually periodic, thereby leaving open the question as to when solutions are bounded. This is joint work with Candace Kent, of VCU.

Time: Friday, September 6, 2013, 1:30-2:30 p.m.

Place: Exploratory Hall, Room 4106