John R. Graef (john-graef@utc.edu), Department of Mathematics, University of Tennessee at Chattanooga, Chattanooga, TN 37403, and Chuanxi Qian* (qian@math.msstate.edu) and Bo Yang (by2@ra.msstate.edu), Department of Mathematics and Statistics, Mississippi State University, Mississippi State, MS 39762. Positive solutions of a class of neutral difference equations.
The authors consider the first order neutral difference equation

$$
\Delta\left(x_{n}-\frac{r_{n}}{r_{n-r}} x_{n-\tau}\right)+q_{n} x_{n-\sigma}=0, n=0,1, \ldots
$$

where $\left\{q_{n}\right\}$ is a sequence of nonnegative real numbers, $\left\{q_{n}\right\}$ is not eventually zero, $\left\{r_{n}\right\}$ is a nondecreasing sequence of positive real numbers, $\tau \geq 1$ is an integer, $\sigma \geq 0$ is an integer, and $\sum_{n=1}^{\infty} \frac{1}{r_{n}}=\infty$. We show that all positive solutions of (E) must be one of four types, and we give conditions for solutions of these types to exist. (Received October 03, 2000)

