962-39-1252 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

$$E \qquad \Delta\left(x_n - \frac{r_n}{r_{n-r}}x_{n-\tau}\right) + q_n x_{n-\sigma} = 0, \ n = 0, 1, \dots$$

where $\{q_n\}$ is a sequence of nonnegative real numbers, $\{q_n\}$ is not eventually zero, $\{r_n\}$ is a nondecreasing sequence of positive real numbers, $\tau \ge 1$ is an integer, $\sigma \ge 0$ 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)