Abstract

This research aims mainly to study properties of three different difference equations. The first equation is

$$x_{n+1} = p_n + \frac{x_{n-1}}{x_n}, \;\; n = 0, 1, ...,$$

with initial conditions $x_{-1} \geq 0$, $x_0 > 0$, and where $\{p_n\}$ is a positive bounded sequence,. The second equation is

$$x_{n+1} = A_n + \frac{x_{n-1}^p}{x_n^q}, \;\; n = 0, 1, ...,$$

where A_n is a positive bounded sequence, the initial conditions $x_{-1} \geq 0$, $x_0 > 0$, and p, $q \in (0, \infty)$. And the third equation is

$$x_{n+1} = p_n + \frac{x_n}{x_{n-1}}, \;\; n = 0, 1, ...,$$

where $x_{-1} > 0$, $x_0 \geq 0$, and p_n is a positive bounded sequence. For each equation we studied periodicity, stability, attractivity and boundedness.