# ON THE BEHAVIOR OF SOLUTIONS OF THE SYSTEM OF RATIONAL DIFFERENCE EQUATIONS

**Allaguly Gurbanlyyev** [1] **& Mehmet Tutuncu** [2]

[1] A. Kelesoglu Education Faculty, Department of Mathematics, N. Erbakan University
Konya 42090, **TURKEY**

[2] High School teacher in a private Diltaş
Konya 42090, **TURKEY**

## ABSTRACT

In this paper, we investigated the behavaior of the positive solutions of the difference equations system

$$x_{n+1} = \frac{y_{n-1}}{x_n y_{n-1} + 1}, \quad y_{n+1} = \frac{x_{n-1}}{x_n y_{n-1} + 1}, \quad z_{n+1} = \frac{z_{n-1}}{x_{n-1} y_n + y_{n-1} x_n}$$

and

$$x_{n+1} = \frac{x_{n-1}}{y_n x_{n-1} + 1}, \quad y_{n+1} = \frac{y_{n-1}}{x_n y_{n-1} + 1}, \quad z_{n+1} = \frac{z_{n-1}}{x_{n-1} y_n + y_{n-1} x_n}$$

where the initial conditions are positive real numbers.

**Keywords:** Difference equations, difference equations systems, solutions, equilibrium point, behavior of solutions, rational difference equations, systems of rational difference equations.