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We investigate the asymptotic behavior, the boundedness nature, the periodic character, and the global stability of solutions of the difference equation

$$x_{n+1} = \frac{\alpha x_n + \beta x_{n-1} + \gamma x_{n-2}}{Ax_n + Bx_{n-1} + Cx_{n-2}}, \quad n = 0, 1, \dots$$

for various parameters

$$\alpha, \beta, \gamma, A, B, C \in [0, \infty)$$

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