

In this thesis, we apply the fractional Elzaki Adomian decomposition method (FEADM) and fractional Elzaki variational iteration method (FEVIM) for solving nonlinear fractional biological population model (NFBPM) with initial conditions. The fractional derivatives are described in Caputo fractional derivative (CFD). At first we work on derived the two methods and after that we apply them to solve this type of equations. We use numerical methods with the Matlab programming and numerical results show that the two approaches are very effective and the approximate solution converges very rapidly to the exact solution which confirms the accuracy of these methods as easy algorithms for computing the solutions for wider classes of PDEs with (CFD)