The existence and stability of the travelling wave solution of a gompertz growth with the simplest nonlinear advection model

Abstract

We show the existence of a travelling wave solution for a simplest nonlinear advection and the Gompertz reaction model. We prove that the solution is perturbatively stable without any restriction on the parameters of the Gompertz model but the stability of one of its trivial solutions is subject to a restriction on one of the values of the Gompertz reaction parameters. We also show that the solution is Poincare stable around one of it critical points provided the wave velocity of the traveling wave solution is greater than the product of the two reaction parameters.