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Ronald E. Mickens* (rmickens@cau.edu), Department of Physics, Clark Atlanta University,
Atlanta, GA 30314. *Analysis of an SIR Model with Population Dynamics.*

We construct an SIR model for which the susceptible population can grow (in and of itself), and the removed population can die off. This model also has the feature that the infective population (in and of itself) reaches zero in a finite time. There is one nontrivial fixed-point and we determine both its local and global stability properties. Of significance is that with our particular selection for the transition/interaction terms, the mathematical model can be solved exactly. For purposes of calculating numerical solutions, in the absence of the analytical solution, a NSFD discretization is formulated. (Received September 02, 2016)