Variants of differential transform method in solving Schrodinger equations

ABSTRACT

This paper obtains analytical solutions for the Schrodinger equations (SEs) using variants of the differential transform method (DTM). The solutions produced by two-dimensional DTM (2D-DTM), reduced DTM (RDTM), and multistep RDTM (MsRDTM) were observed. The outcomes show that the MsRDTM generated more highly accurate solutions to SEs than the 2D-DTM and RDTM. The solutions also show that the MsRDTM is straightforward to use, saves a significant amount of computing work when solving SEs, and has potential for broad application in other complex partial differential equations. Graphical representations are presented to illustrate the different effectiveness and accuracy of the variants of DTM.