

Abstract

We would like to demonstrate how all the known 1D exactly solvable, quasi-exactly solvable, and the recently discovered rationally extended solvable potentials, including those related to the exceptional orthogonal polynomials, can be constructed in a direct and systematic way, which we called the prepotential approach. In this approach, the prepotential, the deforming function, the potential, the eigenfunctions and eigenvalues are all derivable within the same framework, without the need of supersymmetry, shape invariance, or Darboux-Crum transformations.