1079-35-75 **Keri Hagerman*** (khagerman@knights.ucf.edu), Dept of Mathematics, MAP 207, University of Central Florida, Orlando, FL 32816, and **Roy Choudhury** (roy.choudhury141@gmail.com), Dept of Mathematics, MAP 207, University of Central Florida, Orlando, FL. *A New Integrable PT-Symmetric Hierarchy of KdV Equations.*

We generalize the work of Bender and co-workers to derive a new integrable hierarchy of PT-symmetric KdV equations. The possible integrable members are identified employing the Painlevé Test, and are indexed by the integer n, corresponding to the negative of the order of the dominant pole in the singular part of the Painlevé expansion for the solution. As with some other hierarchies, the first or n=1 equation proves non-integrable, the n=2 member corresponds to the regular KdV equation, while the remainder form an entirely new hierarchy. Integrability properties of the n=3 and n=4 members, including Backlund Transformations, Lax Pairs, and soliton solutions are derived. The solitons prove to be algebraic in form, and the extended homogeneous balance technique appears to be the most efficient in exposing the Lax Pair. In particular, it proves both easier and more algorithmic than other competing techniques such as direct integration and linearization of the Painlevé-Backlund equations, or use of recent procedures based on Bell polynomials. (Received December 16, 2011)