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**Lisa Termine Hollman\*** ([Lisa.Termine@trincoll.edu](mailto:Lisa.Termine@trincoll.edu)), Trinity College, Department of Mathematics, Hartford, CT. *Existence of Solutions to Semi-linear Elliptic Differential Equations: Approximation and Verification.*

We investigate a conjecture regarding the number of solutions of a second order elliptic boundary value problem with an asymmetric nonlinearity. This investigation makes use of several computer assisted techniques. First we compute approximate solutions using Newton's Iteration for small  $b$  and then use a continuation method to show that the number of solutions becomes larger as  $b$  increases. Lastly, we discuss how we will use interval arithmetic to show that the exact solution is indeed close to our approximate solution. (Received August 25, 2008)