

Observation:

The Method of Steepest Descent took the longest to converge. The Conjugate Gradient method took the second longest but converged orders of magnitude faster. It was then followed by the Preconditioned Method of Steepest Descent with the Preconditioned Conjugate Gradient method taking the fastest. Hence, Based on these results I can conclude that all these methods converge. In addition, preconditioning the problems increases the rate of convergence dramatically. The rate of increase for convergence was most apparent in preconditioning the method of steepest descent. Preconditioning the CGM did increase the rate of convergence but not as dramatically. Another conclusion is that the CGM converges much faster than the Method of Steepest Descent.