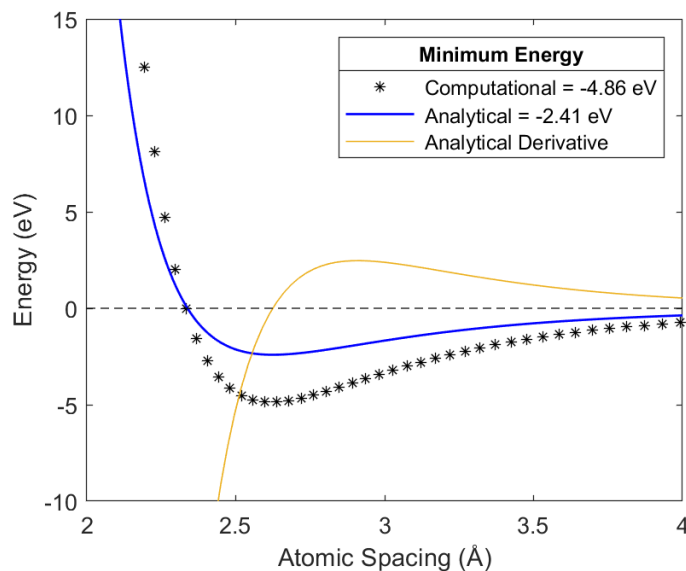


Molecular Statics Lab 1

1. All tests passed in Matlab grader for part 1.
2. All tests passed in Matlab grader for part 2.
3. Energy versus atomic spacing for both the computational and analytical solutions are plotted below. The magnitude of the computational plot has been normalized (divided by the number of atoms which is 50) to better match the analytical magnitude. The derivative was used to determine the minimum energy for the analytical solution and is also plotted. The reason for the difference between the two minimums is the fact that the computational minimum was calculated as the total energy of an array of 50 atoms. Also the interactions of the four nearest neighbors were considered in the computational solution whereas the analytical only considers the effect of one atom.



The following is a plot of the force on each atom of a 50-atom chain plotted along the length of the chain. The force in the middle of all chains is essentially zero. The equilibrium spacing exhibits the minimum amount of force on either end of the chain. A spacing slightly more or less than the equilibrium spacing will increase the magnitude of the force on the ends of the chain.

