**The Hilbert Matrix**

**Graphs:**

**Discussion:**

1. Not only are and faster in terms of big-O compared to Gaussian elimination ( has a big-O of while Gaussian Elimination takes , but the code for and is less verbose, which allows for code that’s both easier to write and to understand, which is crucial to large programs with many moving parts.
2. and have less error in the final decomposition and when solving the system , since and require fewer computations and rely on the properties of Matrices (such as , since is orthogonal) to compute a solution, rather than working out all the math necessary to solve a system of equations.