

Math 352 Quiz5

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1. The Richardson Method has a generic formula of

$$x_{k+1} = (I - \alpha A)x_k + \alpha b.$$

2. If we are to use the Method of Gaussian Elimination to solve a linear system, the cost is usually of order $O(n^3)$. The cost is fine. However, if the matrix concerned is sparse, then in general, the lower and upper triangular matrix are usually full in the sense of the entry number.

For an iterative method with the generic formula of

$$x_{k+1} = B_k x_k + c_k,$$

the computational cost for each step is n^2 where n is the size of B_k . If we get a desired answer in k steps, the cost is roughly kn^2 . The computational cost is more appreciable if k is relatively small.