01/03/2017

MSc. Applications of Mathematics

Linear Algebra - Homework 6

(Due on 08/03/2017 at 10:30 a.m.)

Instructions:

- Solutions must be complete and legible in order to earn maximum points.
- You may discuss and work together if necessary but you must write your own solutions. Copied solutions (from each other or books or the internet) are easy to identify and easier to grade as they can only earn a zero.

1. Solve the system of equations $Ax = b$ using Jacobi, Gauss-Seidel and SOR (with $\omega = 1.5$) upto 2 iterations where
$$A = \begin{pmatrix} 2 & -1 \\ -1 & 2 \end{pmatrix}, b = \begin{pmatrix} 3 \\ 4 \end{pmatrix}.$$
Choose initial solution $x_0 = [1, 1]^t$.
2. Calculate the actual solution of the above system using Gaussian elimination.
3. Write an algorithm for the Jacobi method.