MATH 3650 : Homework No.9

Due: Wednesday, March 28

The following problems are from the notes: Problem Set 4_0 (posted in Canvas).

No.1. Problem No.3

No.2. Problems No.6

No.3. Problems No.9

No.4. Problems No.12

DeSolveHW5.m is the MATLAB file solution to Homework No.5.

In MATLAB the command condest(A) estimates 1-norm condition number of the matrix A.

No.5.
(a) For values of nsub = 200, 400, 800, 1600 and 3200 use condest(Amat) to estimate the condition number of the coefficient matrix generated in DeSolveHW5.m.
(b) Copy the values of nsub and the associated $\kappa(Amat)$ values into an Excel worksheet.
(c) Using successive values of nsub and $\kappa(Amat)$, estimate α such that $\kappa(Amat) \approx C\,(nsub)^{\alpha}$, where C is a constant.
(d) Copy your Excel table into your Word document.

No.6.
(a) In DeSolveHW5.m, after Amat and bvec have been assembled, scale each row of Amat (and bvec) such that the largest (in magnitude) entry in each row of Amat is 1.
(b) Copy the lines of MATLAB code you used to scale Amat (and bvec) into your Word document.
(c) Repeat **No.5**.
(d) Comment on any noticeable changes in the condition number of Amat.
