Math 637 **Homework 5** N. Mackey

Due: 14 Feb 2012.

Always include justification.

Notation: TB=Trefethen & Bau.

1. TB, p. 30, problem 4.1 a, c, d, e.
   For some of these matrices, an SVD should be found by simple inspection. For others, Theorem 5.4 on p.34 could be useful.

2. TB, p.30, problem 4.4.

3. TB, p.68, problem 9.3. (The HELLO problem.) Some guidelines:

   - Submit a print out of your code in addition to the output.
   - Write modular code, and comment your code. Annotations by hand are okay.
   - Use `format compact` to suppress unnecessary line feeds.
   - For part (a), 5 points will be reserved for correctness, and 5 points for elegance.
   - Instead of `pcolor(A)` you may need to use `pcolor(flipud(A))`. (Find out about `flipud` and `fliplr`.)
   - For part (c), use the `subplot` command so that images of all the approximations are on the same page. Organize your output in a compact and readable fashion.
   - Output must be accompanied by commentary – what does the output say to you? (If it says nothing to you, then please say so, so I know :-). Can you explain your observations? Such observations/explanations are best made on the same page as the output. Writing them by hand, or marking the output appropriately is perfectly fine, even preferable at times.