Homework: 2

Due: September 29.

1. Count the number of floating point operations required to compute the QR decomposition of an m-by-n matrix using (a) Householder reflectors (b) Givens rotations.
2. Trefethen 5.4
3. If $A=R+uv^*$, where R is upper triangular matrix and u and v are (column) vectors, describe an algorithm to compute the QR decomposition of A in $O(n^2)$ time.
4. Given the SVD of A, compute the SVD of $(A^*A)^{-1}$, $(A^*A)^{-1}A^*$, $A(A^*A)^{-1}$, $A(A^*A)^{-1}A^*$ in terms of U, Sigma and V.