CS 383C/CAM 383C/M 383E **Homework 3** **Due: Oct 21, 2002**

1. (5 pts): Prove that an $m \times n$ matrix A is of full column rank (i.e. rank(A) = n) **if and only if** $A^T A$ is nonsingular.

2. (10 pts) Do Exercise 2.18 from the textbook.

3. (10 pts) Do Exercise 2.19 from the textbook.

4. (15 pts) Implement in MATLAB, the following two versions of Gaussian Elimination:

   - The traditional 3-loop version
   - The blocked version as described in class.

   Compare the performance of both and discuss if the blocked version yields any gains in performance.