

MATH 566  
Final Examination

due 13 December 2005 at 1730

- 1) Do Exercises 1.7.47, 4.1.11, 4.1.12, 4.2.3, 5.2.14c, 5.2.17, 5.2.20, 5.3.13, 5.3.14
- 2) Let  $Q$  be an orthogonal matrix with eigenvalue  $\lambda$ . Prove that  $\lambda\bar{\lambda} = 1$ , where  $\bar{\lambda}$  is the complex conjugate of  $\lambda$ .
- 3) Let  $A$  be a symmetric matrix. Prove that the eigenvalues of  $A$  and the singular values of  $A$  are the same.