Homework #3

Problem

Prove that in an SVD $A = U\Sigma V^*$, the columns of V are eigenvectors of A^*A and the columns of U are eigenvectors of AA^*. This is also a hint for problem 5.3.

Problems from the textbook:

Problems 3.2, 3.3, 3.4, 4.1, 4.2, 4.4, 5.2, 5.3 (a)-(d) only, 5.4.

Hint for problem 4.1: do not do this by finding eigenvalues of A^*A. Rather, figure out the range, the kernel, etc.

Hint for problem 4.4: matrices A, B are similar if $B = T^{-1}AT$. They have the same eigenvalues. Use this fact.

Hint for problem 5.3: find eigenvalues and eigenvectors of A^*A. Also, see the first problem in this homework.