Math 54 Handout 15

July 23, 2018

Question 1.

Find the singular value decomposition $A = U\Sigma V^T$ of $A = \begin{pmatrix} -3 & 1 \\ 6 & -2 \\ 6 & -2 \end{pmatrix}$

Question 2.

Let $A = U\Sigma V^T$ be the singular value decomposition of A. Show that the columns of V are the eigenvectors of $A^T A$, and the columns of U are the eigenvectors of AA^T.

Question 3.

Show that if P is an orthogonal $m \times m$ matrix, then PA has the same singular values as A.