

Homework assignment, April 23, 2004.

1. Find singular value decomposition $A = \sum_{k=1}^r s_k \mathbf{w}_k \mathbf{v}_k^*$ for the following matrices

$$\begin{pmatrix} 2 & 3 \\ 0 & 2 \end{pmatrix}, \quad \begin{pmatrix} 7 & 1 \\ 0 & 0 \\ 5 & 5 \end{pmatrix}, \quad \begin{pmatrix} 1 & 1 \\ 0 & 1 \\ -1 & 1 \end{pmatrix}$$

2. Let A be an invertible matrix, and let $A = W\Sigma V^*$ be its singular value decomposition. Find a singular value decomposition for A^* and A^{-1} .

3. Show that $|\det A| = \det |A|$