# Homework 8

July 18, 2016

## Problem 1.

Find the Singualr Value Decomposition of the matrices problem 2 on page 399

## Problem 2.

Problem 2 page 295 (not the true false question)

## Problem 3.

Problem 10 page 297

## Problem 4.

Problem 6 page 310

## Problem 5.

Let $\mathbf{A} \in \mathbb{C}^{n \times n}$ be diagonalizable with eigenvalues $0 \leq \lambda_1 \leq \lambda_2 \leq \cdots \leq \lambda_n$. Express in the terms of the spectral decomposition of $\mathbf{A}$ the set of vectors $\mathbf{x}$, and $\mathbf{y}$ for which

$$\lambda_1 \leq \frac{\mathbf{x}^\top \cdot \mathbf{A} \cdot \mathbf{y}}{\mathbf{x}^\top \cdot \mathbf{y}} \leq \lambda_n \tag{1}$$