MATH 54 SPRING 2019: DISCUSSION 109/112 QUIZ#7

GSI: CHRISTOPHER EUR, DATE: 4/9/2019

STUDENT NAME: _____

Problem 1. Find the SVD of the matrix $A = \begin{bmatrix} 2 & -1 \\ 2 & 2 \end{bmatrix}$.

Problem 2. In the above problem, find a unit vector $\vec{x} \in \mathbb{R}^2$ such that the length of $A\vec{x}$ is maximized. (If you did not do problem 1, you may suppose the SVD was $U\Sigma V^T$ where Σ is a diagonal matrix with entries $\sigma_1 > \sigma_2$, and V a matrix with columns v_1, v_2, and U a matrix with columns u_1, u_2, and phrase the answer in terms of those).