HOMEWORK 8

Problem 1. §4.3 #13

Problem 2. §5.1 #1(c)(d)

Problem 3. For each pair of vectors, find the scalar projection of $\mathbf{v}$ onto $\mathbf{w}$ as well as the vector projection of $\mathbf{v}$ onto $\mathbf{w}$.

(a) $\mathbf{v} = \begin{bmatrix} 6 \\ 0 \\ 0 \end{bmatrix}$ $\mathbf{w} = \begin{bmatrix} 3 \\ 0 \\ 4 \end{bmatrix}$.

(b) $\mathbf{v} = \begin{bmatrix} 6 \\ 0 \\ 0 \end{bmatrix}$ $\mathbf{w} = \begin{bmatrix} 6 \\ 0 \\ 8 \end{bmatrix}$.

(c) $\mathbf{v} = \begin{bmatrix} 12 \\ 0 \\ 0 \end{bmatrix}$ $\mathbf{w} = \begin{bmatrix} 3 \\ 0 \\ 4 \end{bmatrix}$.

Problem 4. §5.2 #1(b)(c) Beware: $R(A)$ is the *column space* of A. (The R stands for range.) I'll try to stick with $\text{row}(A)$ and $\text{col}(A)$.

Problem 5. §5.2 #8

Problem 6. For each of the following systems $A\mathbf{x} = \mathbf{b}$, find all least squares solutions.

(a) $A = \begin{bmatrix} 1 & 1 & 2 \\ 2 & 0 & 2 \\ 1 & 0 & 1 \\ 1 & 1 & 2 \end{bmatrix}$, $\mathbf{b} = \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$.

(b) $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$, $\mathbf{b} = \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$.