Math 2210Q-004 Applied Linear Algebra
E-Mail Assignments
on the readings in the textbook

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This is NOT due, but I hope you will use this in preparation for class
But if you have missed more than three unexcused email assignments,
I will accept this one in place of one of those.
If submitted, please submit it by 7:00 am on Tuesday, April 28 (before class)
to dgross@math.uconn.edu.

Not Due

Section 6.3 Orthogonal Projections
Section 6.4 The Gram-Schmidt Process

To read: Reread section 6.2; read section 6.3 and 6.4

To Do: Homework from section 6.1

Be sure sure to understand: The section on "An Orthogonal Projection" in section 6.2; Matrices with orthonormal columns (Theorems 6 & 7), Figure 2 and Theorem 8 in section 6.3; section 6.3; The first paragraph of section 6.4 before example 1 and the Gram-Schmidt process.

Questions:

1. What is so special about a linear transformation $\vec{x} \to U\vec{x}$ represented by an orthogonal matrix U (that is, a matrix U with orthonormal columns)?
2. If W is a subspace of $\mathbb{R}^n$, then any vector $\vec{y}$ in $\mathbb{R}^n$ can be written as $\vec{y} = \widehat{y} + \vec{z}$ as in the orthogonal decomposition theorem. What vectors does $\widehat{y}$ and $\vec{z}$ equal if the vector $\vec{y}$ is already in W to begin with?
3. What is the Gram-Schmidt process for?
