MATH-332: Linear Algebra	Chapter: 6

<div align="center">

Orthogonality and Least Squares

Section 6.4: Gram-Schmidt Process
</div>

pgs. 402 - 409 *July 27, 2009*

<div align="center">

Lecture: Gram-Schmidt Process
</div>

Topics:	The Gram-Schmidt Process Orthonormal Bases QR Factorization
Problems	Prac: 1 Prob: 3, 5, 7, 11, 13, 15, 17, 18, 19

<div align="center">

Section Goals
</div>

- Understand how the Gram-Schmidt process can be used to construct orthonormal bases for vector spaces and that this can be used to define the **QR** matrix factorization.

<div align="center">

Section Objectives
</div>

- Present an example of GS on vectors from $\mathbb{R}^2$ and generalize this to the Gram-Schmidt process (theorem 6.4.11 page 404).

- State theorem 6.4.12, which states that every $m \times n$ matrix with linearly independent columns has a **QR** factorization, and provide an example of a **QR** factorization of a 3×3 matrix.