MA 2073. HOMEWORK 3
DUE: FRIDAY FEBRUARY 7

Problems from text:

Section 3.6: 3, 4, 6, 9, 11, 13, 14, 24, 25, 32

Section 8.2: 1 – 5, 15, 17

Section 4.1: 13, 14, 15, 18, 21, 23, 24, 28, 32

Additional problems:

1. Let $W = span\{\mathbf{v_1}, \ldots, \mathbf{v_p}\}$. Show that if $\mathbf{x}$ is orthogonal to each $\mathbf{v_j}$, for $1 \leq j \leq p$, then $\mathbf{x}$ is orthogonal to every vector in W.

2. Let W be a subspace of $\mathbb{R}^n$, and let $W^\perp$ be the set of all vectors orthogonal to W. Show that $W^\perp$ is a subspace of $\mathbb{R}^n$. *Hints:* A subspace is closed under vector addition and scalar multiplication, and it contains the zero vector. It may be helpful to review the properties of the dot product.