Homework 1–21-241, Matrices and Linear Transformations

Name: _____

Section: _____

Instructions: Complete the following problems. Staple this sheet, with your name and section filled in, to the top of your work. Failure to attach this sheet will result in a one point deduction in the grade. The assignment will be graded out of ten points.

DUE: BEGINNING OF CLASS, FRIDAY, SEPTEMBER 11

Book Problems

1. Section 1.1: 2, 8, 12, 14, 16, 24

2. Section 1.2: 2, 8, 14, 17, 22, 24, 26, 30, 38, 42, 52, 68

3. Section 1.3: 6, 10, 14, 28

4. Section 1.4: 4

Other Problems

1. Show that the only vector $\mathbf{v}$ in $\mathbb{R}^n$ that is orthogonal to every other vector in $\mathbb{R}^n$ is the zero vector.

2. Let $\mathbf{u}$, $\mathbf{v}$, and $\mathbf{w}$ be in $\mathbb{R}^n$. Show that if $\mathbf{u}$ is orthogonal to $\mathbf{v}$ and $\mathbf{w}$, then $\mathbf{u}$ is orthogonal to any linear combination of $\mathbf{v}$ and $\mathbf{w}$.