MAT-150: Linear Algebra

Homework 1

Due: 9/1/2017

Book Problems

Please turn in your solutions for each of the following exercises.

§1.1: 3, 33

§1.2: 23, 24

§1.3: 7, 8

§1.4: 15, 16

§1.5: 15, 16

§1.7: 39, 40

Other Problems

Problem 1

Write pseudo-code for an algorithm that uses partial pivoting to reduce an augmented matrix to echelon form and then uses back-substitution to solve the associated system of equation.
Hint: Use steps 1-5 on pp. 15 - 17 of your book to help guide you. Also, your algorithm may terminate if it encounters a free variable or an inconsistent system.

Problem 2

Prove the Existence and Uniqueness Theorem. That is, show that a linear system is consistent if and only if the rightmost column of the augmented matrix is not a pivot column.
Hint: Use the discussion on p. 20 of your book to help guide you.

Problem 3

Prove Theorem 4 on p. 37 of your book.
Hint: Use the discussion that follows the theorem in your book to help guide you.

Problem 4

Prove Theorem 6 on p. 47 of your book.
Hint: Use Exercise 25 on p. 49 of your book to help guide you.