ME 185: Numerical Analysis
Homework 1: Theory of Linear Equations.

Problem 1

Read Chapter 7.

Problem 2

Implement the algorithm of Gauss Elimination with row pivoting as described in the text: Pseudocode 2-2 and 2-3.

Problem 3

Solve the following problem using theory of linear equations. Namely, first write the problem into the form $Ax = b$. Then, if the problem can be solved, apply Gaussian elimiation to get the solution. If the problem cannot be solved, you must explain in detail why this is so.

A rope over the top of a fence has the same length on each side and weights 0.4 lbs/ft. On one end hangs a monkey holding a banana, and on the other end a log equal to the weight of the monkey and the banana combined. The banana weighs 2 ounces per inch. The length of the rope in feet is the same as the age of the monkey, and the difference of the weight of the monkey and the banana in ounces is sixteen times the age of the monkey's mother. The combined ages of the monkey and its mother are 30 years. One-fourth of the difference of the weight of the monkey and the banana in pounds is one-fifth of the total weight of rope and the log. The difference in age between the monkey and its mother is the same as the lenght of the rope in feet. How long is the banana?