ECE340
Spring 2013
Assignment #5

Due, Friday March 1, 4 PM in the TA's office

From the text:
3.10, 3.13, 3.16(a), 3.17, 3.21 (a), and 3.28

Special Problem:
Consider the sample space $\Omega=\{H,T\}^2$, and define the r.v. X as follows:
$X((H,H))=10$; $X((H,T))=5$; $X((T,H))=7$; and $X((T,T))=0$.

a) Calculate and plot the probability mass function for X.

b) Write a Matlab code to simulate this random variable n times.

c) Estimate μ_X using your simulation program as follows: for a given n, generate X, n times, and find its arithmetic mean. Plot this arithmetic mean as a function of n. Then increase n until your results begin to stabilize.

d) Compare your estimated mean to the theoretical mean calculated from the usual formula for μ_X.

e) Write a short paragraph (1/3 page) on what you have learned from this exercise. You will be graded for your writing as well as the technical content of the paragraph.