ECE 340: PROBABILISTIC METHODS IN ENGINEERING

Homework #5

From the text:

3.10, 3.13, 3.16(a), 3.17, 3.21 (a), and 3.28

Special Problem:

Consider $\Omega=\{H,T\}^2$, 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) Write a Matlab code to simulate this random variable n times.
b) Estimate E[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. Increase n until your results stabilize.
c) Compare your estimated mean to the theoretical mean calculated from the usual formula for E[X].
d) 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.