

## ECEn 370

### Homework Problem Set 7

Due on Friday, February 26, 2014.

From Bertsekas and Tsitsiklis, *Introduction to Probability, 2nd Ed.* or from Schaum's. Come see me and make an appointment if you are having problems with MATLAB or other class-related issues. Additional MATLAB hints are found on the course website.

1. (5 pts) Chapter 3 Problem 18.
2. (5 pts) Chapter 3 Problem 19.
3. (5 pts) Schaum's 3.29
4. (5 pts) Schaum's 3.30
5. (5 pts) Schaum's 3.40
6. (5 pts) Schaum's 3.41
7. (20 pts) Chapter 3 Problem 23. Do the whole problem.  
MATLAB. From the previous homework assignment, you should be able to define a triangle and then create a uniform distribution within that triangle.
  - a) Turn in a plot of your triangle with your vertices at (0,0), (0,1), and (1,0).
  - b) Plot an estimate of the marginal PDF of Y (essentially you can just examine the Ys). Show that this is the same as determined analytically.
  - c) Plot an estimate of the conditional PDF of X given  $Y = 1/2$ . (To do this, you can select points that are +/- some small distance from  $Y=1/2$ ).
  - d) Compute  $E[X]$  from simulation.
8. (20 pts) Chapter 3 Problem 24. Do the problem analytically.  
MATLAB. Plot the triangle as in the previous problem.
  - a) Turn in your plot of the triangle.
  - b) Find  $E[X]$  from simulation.
  - c) Find  $E[Y]$  from simulation.
9. (5 pts) Chapter 3 Problem 34.