Statistics 394, Problem Set 7

Wellner; 2/16/2000

Reading:	Kelly, Chapter 4, Sections 4.1 - 4.4.
Optional Web Reading:	Section I.D.1,2,3,5 Expected Value; Variance, Correlation; Conditional Expected value at http://www.math.uah.edu/stat/expect/index.html .
Due:	Wednesday, February 23, 2000.

1. K 3.5, #9, page 207.

2. K 4.1, #3, page 238.

3. K 4.1, #5, page 238.

4. K 4.1, #7, page 238.

5. K 4.1, #9, page 239.

6. K 4.1, #15, page 240.

7. Bonus Problem 1: K 4.1, # 8, page 239. In part (c), let $T_n = X_1 + \cdots + X_n$ denote your winnings in n plays of the game. Compute $E(T_n)$, $Var(T_n)$, and $\sigma_{T_n} = \sqrt{Var(T_n)}$ first for n plays of the game; then make a table of these quantities for $n = 10^2, 10^3$, and 10^4.

8. Bonus Problem 2: Look at the Bivariate Uniform Experiment at the Virtual Laboratories website:

   `http://www.math.uah.edu/stat/expect/index.html`

   (a) For the circle part of this experiment, give a picture showing the region where the density is positive and where it is zero.
   (b) For the circle part of this experiment, find the marginal density of X.
   (c) Find the conditional density of $(Y|X = x)$ for x in the range -6 to 6.
   (d) Verify that the correlation coefficient equals zero: $\rho_{X,Y} = 0$.