MA 485-1E (Probability Theory), Dr. Chernov Assignment #11 Due Mon, Nov 11

Chapter IX. Problems 9.2.2, 9.3.3 (Hint: the pieces have lengths X and 1 - X), 9.3.6<sup>\*</sup>.

Chapter X. Problems 10.2.10.

Two more problems:

**11-A.** Suppose X and Y are two independent random variables uniformly distributed on the interval (0, 1). Let  $V = X^2 + Y^2$  and W = XY. Find Cov(V, W).

**11-B**. A random variable X takes values -2, -1, 0, 1, 2 with probability 1/5 each. Find  $Cov(X, X^2)$ . Are X and  $X^2$  independent?

The starred problems are for extra credit. Each problem is graded on the base of "4 points max".

Note: the average on the second midterm test was 16 points out of 20, i.e. 80%.