

STAT/MA 416 Fall 09 Section 002

Homework 9

Due: November 9, 2009, 9:30am

Please show all your work, don't just write down the final number.

- Reading: Chapter 6.2.1-6.2.3, 7, 11.1-11.2
- Exercises 6.2.3, 7.1.1, 7.1.4, 7.1.8, 7.2.4, 7.2.9, 7.2.10, 11.1.5
- Ross (8th edition, problems should match the 7th edition)

5.37 If X is uniformly distributed over $(-1, 1)$, find

(a) $P(|X| > \frac{1}{2})$;

(b) the density function of the random variable $|X|$.

5.39 If X is an exponential random variable with parameter $\lambda = 1$, compute the probability density function of the random variable Y defined by $Y = \ln X$.

6.21 Let

$$f_{XY}(x, y) = 24xy \quad 0 \leq x \leq 1, 0 \leq y \leq 1, 0 \leq x + y \leq 1$$

and let it equal to 0 otherwise.

- Show that $f_{XY}(x, y)$ is a joint probability density function
- Find $E[X]$.
- Find $E[Y]$.