Economics 520, Fall 2007
Homework 3
Due Tuesday, Sept 18 at beginning of class

1. CB 2.7, part a.
2. CB 2.9
3. CB 2.14, part a.
4. CB 2.30, parts a, b.
5. The random variable X has a probability density function

$$f(x;\lambda) = \frac{\lambda^x \exp(-\lambda)}{x!}$$

for $x = 0, 1, 2 \ldots$ (i.e. X has a Poisson distribution with parameter λ). In a lengthy manuscript, it is discovered that only 13.5 percent of the pages contain no typing errors. If we assume that the number of errors per page is a random variable with a Poisson distribution, find the percentage of pages with exactly one error.

6. Consider the following PDF:

$$f_X(x) = 3x^2, \quad 0 < x < 1.$$

(a) Calculate (analytically) $E(X)$ and $V(X)$.
(b) Calculate (analytically) the median of X.
(c) Using the `integrate` function in R, calculate the mean and variance of X and compare this to your result in part a. (Show any functions you define and commands used to calculate this.)
(d) Using R, verify that the median calculated in part b is correct.