Statistics 110 – Assignment 3

Due: Tuesday, July 18, 2006

1. Rice 2.64
2. Rice 2.66
3. Rice 2.67
4. Rice 2.68
5. Rice 3.8
6. Rice 3.14
7. Rice 3.20
8. Rice 3.24
9. Rice 3.40
10. The joint density of X and Y is given by

$$f(x,y) = c(3y - x)e^{-y}; \qquad 0 \le x \le 3y, y \ge 0$$

    (a) Find the value of c making this a valid joint pdf.
    (b) Find the marginal densities of X and Y. Are X and Y independent?
    (c) Find $E[Y]$.
    (d) Find the conditional density of Y given $X = x$.
    (e) Use the density calculated above to get $E[Y|X = x]$.
    (f) Now let $g(x) = E[Y|X = x]$. Find $E[g(X)]$.
    (g) Do $E[g(X)]$ and $E[Y]$ have any relation?

Suggested additional problems from Rice (don't hand in)

2.71, 3.15, 3.18, 3.31