18.440 problem set 7, due Wednesday, Nov. 9, 2005

Problems 1-4 from Ross are from the 7th Ed.; problem numbers in the 6th ed. were the same.

1. Chap. 6, Problem 24(a)-(c).

2. Chap. 6, Problem 40.

3. Chap. 6, Problem 41(a), (b).

4. Chap. 6, Problem 45. *Hints*: Show that the event whose probability we want is the union of three disjoint events which each have the same probability. Write $(X, Y, Z) = (X_1, X_2, X_3)$. If $Z > X + Y$, what must be true of X and Y?

5. Let (X, Y) be uniformly distributed over the disk $x^2 + y^2 \leq 1$ in the plane. So, its density function is $1/\pi$ inside the disk and 0 outside it.

(a) What is the conditional density of Y given $X = x$?

(b) What is the marginal density of X?