

Homework 8, Sta 531 Fall 2008

Due 10/10 or 10/13

1. Suppose the joint density function of (X, Y) is

$$f(x, y) = 2; \quad 0 < x < y < 1$$

and $f(x, y) = 0$ otherwise.

Please find the density of X given $X + Y = t$. (notice t can be $\in (0, 1)$ or t can be $\in (1, 2)$)

2. In the problem 1, is X independent of Y ? Justify your answer.
3. Verify the dotted arrow from Gamma box to the normal box in the “map” at the back of the book. Notice you need to first formulate the theorem, with all the normalizing constants, first and then try to prove it.