## Tutorial 6 October 21/22, 2010

1. Let X be a discrete random variable with PMF  $p_X$  and let Y be a continuous random variable, independent from X, with PDF  $f_Y$ . Derive a formula for the PDF of the random variable X+Y.

2. The random variables X and Y are described by a joint PDF which is constant within the unit area quadrilateral with vertices (0,0), (0,1), (1,2), and (1,1). Use the law of total variance to find the variance of X + Y.

- 3. (a) You roll a fair six-sided die, and then you flip a fair coin the number of times shown by the die. Find the expected value and the variance of the number of heads obtained.
  - (b) Repeat part (a) for the case where you roll two dice, instead of one.

MIT OpenCourseWare http://ocw.mit.edu

6.041SC Probabilistic Systems Analysis and Applied Probability Fall 2013

For information about citing these materials or our Terms of Use, visit: http://ocw.mit.edu/terms.