MAT135a
Homework 8 (Due in class on March 16, 2015).

Reading: Please read pages 76-105 of the Gravner's notes.

Problem 1.

Joint density of (X, Y) is given by

$$f(x, y) = xe^{-x(y+1)}, \quad x, y > 0.$$

(a) Find the conditional density of Y given $X = x$.

(b) Compute the density of $Z = XY$.

Problem 2. Select a point (X, Y) at random from the square $[-1, 1] \times [-1, 1]$. Compute

(a) $E(|X| + |Y|)$,

(b) $E|XY|$,

and

(c) $E|X - Y|$.

Problem 3.

There are 20 birds that sit in a row on a wire. Each bird looks left or right with equal probability. Let N be the number of birds not seen by any neighboring bird. Compute EN.