

## Homework 8

Do the problems on **Webwork** and turn the following problems in class on Mar. 23th.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

**Problem 1.** Let  $X$  and  $Y$  have joint probability density function:

$$f_{X,Y}(x, y) = \frac{1}{2\pi} e^{-\frac{x^2+y^2}{2}}$$

for all  $x, y$ . Compute the probability that  $0 \leq X \leq Y$ .

**Problem 2.** You roll a fair 6-sided die until you get 1. Let  $X$  be the random variable denoting the trial on which you first roll a 1.

Then you toss a fair coin of  $X$  times, let  $Y$  denote the number of heads.

What is the joint probability mass function of  $(X, Y)$ ?