

MA 485-1E (Probability Theory), Dr. Chernov  
Due Mon, Sep 22

Assignment #4

Chapter IV. Problems 4.3.2, 4.3.10 (in these problems, ignore the question on the distribution function, do only probability function)

Chapter V. Problems 5.1.4, 5.1.18 (you may use Poisson approximation here), 5.2.10, 5.3.6, 5.1.20\*, 5.1.26\*, 5.2.26\*

The starred problems are for extra credit. Each problem is graded on the base of “4 points max”.

You may access on-line calculators for binomial and Poisson random variables on my web page (link to Helpful Calculators). You may use them to double-check the answers to your homework problems but you still need to provide a solution.

The second additional assignment for 585 students:

3. Read subsections on Negative Binomial random variable (page 205) and Hypergeometric random variable (pages 207-208). Do problems 5.3.20abc and 5.R.4 (page 215).

Hints: in 5.3.20a, you need to compute a conditional probability, in 5.3.20b try to compare  $P(X = n)$  to  $P(X = n + 1)$  and determine which one is larger, in 5.3.20c, add probabilities for  $n = 2, 4, 6, \dots$ ; in 5.R.4 note that 70% of  $n$  students makes  $D = 7n/10$  students and use the hypergeometric formula.