

Introduction to Probability

Math 30530, Section 01 — Fall 2012

Homework 5 — due Friday October 5

General information: Homework is an essential part of your learning in this course, so please take it very seriously. It is extremely important that you keep up with the homework, as if you do not, you may quickly fall behind in class and find yourself at a disadvantage during exams.

You should treat the homework as a learning opportunity, rather than something you need to get out of the way. Reread and revise your solutions until they are correct and concise. This will help deepen your understanding of the material. I encourage you to talk with your colleagues about homework problems, but your final write-up must be your own work.

You should present your final homework solutions clearly and neatly. Keep in mind that when you write a homework solution, you are trying to communicate the solution to someone other than yourself, so incomplete sentences and personal shorthand is not helpful!

I plan to quickly post solutions to all the problems after I've collected them up.

Reading:

- Chapter 13
- Chapter 14
- Chapter 15
- Chapter 16
- Chapter 19
- Chapter 20
- Chapter 21
- Chapter 22

Problems: (**GW** indicates that the problem is taken from the course textbook by Gundlach and Ward)

1. **GW** 15.7
2. **GW** 15.8
3. **GW** 15.20
4. **GW** 15.22
5. We said in class that the geometric random variable is the only memoryless discrete random variable. This exercise ask you to show that the binomial random variable is not in general memoryless.
 - Let $X \sim \text{Binomial}(10, .2)$. Compute $\Pr(X > 6|X > 2)$ and $\Pr(X > 4)$, and verify that the answers you get are different.
6. **GW** 16.4
7. **GW** 16.9
8. **GW** 16.12
9. **GW** 21.1
10. **GW** 21.3
11. **GW** 21.10
12. **GW** 21.17
13. **GW** 21.23
14. **GW** 21.28
15. **GW** 21.28
16. **GW** 21.31
17. **GW** 21.35