Homework 1: Math 3215-C (Probability and Statistics)

Due August 31st, 8 p.m. ATL

All problems are worth 2 points (20 total) and you can get a partial point.

Problem 1. *Let P be a probability. Is it true that, for any two events A, B,*

1. *$P(A|B) + P(A'|B) = 1$?*
2. *$P(A|B) + P(A|B') = 1$?*

Problem 2. *Check that $\emptyset$ and S are independent of any events, including themselves.*

Note: in the textbook conditional probability $P(A|B)$ is defined only when $P(B) > 0$. When $P(B) = 0$ we will define $P(A|B) = 0$, for any event A. For example, when $B = \emptyset$, $P(A|\emptyset) = 0$ by this definition.

Problem 3. *Do problem 1.3-11 (a)-(c).*

Problem 4. *Do problem 1.3-16.*

Hint: either follow example 1.3-10 in the textbook or solve similar to the fair and biased coin example in the slides.

Problem 5. *Do problem 1.4-2.*

Problem 6. *Do problem 1.4-8.*

Problem 7. *Do problem 1.4-12. (In (d), it is asking for exactly three heads).*

Problem 8. *Do problem 1.4-14.*

Problem 9. *Do problem 1.5-6.*

Problem 10. *Do problem 1.5-14.*