Stat 450

Chapter 3 homework

Fall 2016

Turn in the following problems from WMS7 at the beginning of class on **Friday, Sept 16**. All problems must show full work to receive credit.

- 3.2
- 3.12, 3.13, 3.21, 3.29, 3.33
- 3.55, 3.61
- 3.70, 3.71, 3.85
- 3.90
- 3.118
- 3.123, 3.128, 3.129, 3.130, 3.138
- 3.153, 3.156, 3.158
- 3.188, 3.202 (b then a; see below), 3.203, 3.215

Miscellaneous hints/points of clarification:

3.29: there is a typo in my textbook. It should read: "Show that $E(Y) = \sum_{k=1}^{\infty} P(Y \geq k)$."

3.118: start by writing out a conditional probability and reasoning from there.

3.202: Start with part b) by deriving the distribution of W. Note that if Y is the number of cars driving past in a one-minute interval, and W the number of those cars that would decide to park, then $(W|Y = y) \sim BIN(y, p)$. Write out $P(W = w|Y = y)P(Y = y)$ and apply the law of total probability to derive $P(W = w)$. Then use the distribution of W to answer part a).

2.215: I believe the problem could be more clearly worded. Note that it is referring to N people needing to be tested. Either they will all be tested individually (option 1), or they will be broken up into n groups of equal size k. Option 2 will then be applied to each of the n groups of size k. We want to know how many tests this will save above testing nk people individually.