MATH 420/620 HW #2   Due: 12pm on FRI, 29 Sep 2017

Instructions: A printed copy of your homework is due at **the start of class**. Supplementary electronic files (e.g. R scripts or wxMaxima files) should be emailed to the instructor prior to class with file name format LASTNAME-HWX.EXT (send multiple files in a single ZIP file).

Exercise 1. (10 pts) Describe how parametric and non-parametric bootstrapping differ, and the pros and cons of the two.

Exercise 2. (10 pts) In class we have used the R function `glm()` to do Poisson regression. What other probability distributions can be used by `glm()`? Why isn't the Negative Binomial distribution one of them?

Exercise 3. (15 pts) In class on Friday (see the R script `data-files-inclass.R` and other files from this past week, as needed) we merged a second set of observer data into our count data example. As discussed in class (and in the R script mentioned above), assess whether or not `Observer` differences introduce any error into the data (e.g. some observers being better or worse at detecting individuals to count). Do this by adding `Observer` as a covariate to the Negative Binomial regression analyses discussed on Wednesday (see the course website for the code posted by the instructor after class on that day). Provide a summary table of output and discuss that output in the context of whether or not `Observer` bias is a confounding variable in this data analysis. **MATH 620 Students**: Include interaction terms in the regression as well, and consult the instructor as needed.