Problem Sets Prior to Test 1

*Only turn in problems that are **not** bracketed.* Bracketed problems are additional problems you can look at. Round brackets indicate problems that may help you with problems that are assigned; square brackets are additional problems on material that you should know, but you are not required to write up solutions; curly brackets are truly optional and may contain extra nuggets that you will not be required to know but may be interested in.

Additional assignments will be filled in over time.

PS	Due	Source	Problems
1	Tue 1/30	Appendix D	**1** distributions **2** expected value
			3–11 Don't actually do these, just triage the problems. Which problems (or parts of problems) would be easy? What would be more challenging? What have you forgotten?
			Use R Markdown for problems D.1 and the triage. (I encourage you to try using R Markdown for D.2 as well, but it will require a bit of mathematical notation.)
2	Thu 2/1	FASt 5	**1** mle dice **2** 10-sided
3	Tue 2/6	FASt 5	**4** two estimates **5** plant density
		Appendix D	**5–6** fair coin? **7** min **8** mixture **9abc** lognormal
			Notes: If you have forgotten how to write functions in R, take a look at in Appendix A for an extended example. (There are lots of other good R things in there as well.)
4	Fri 2/9	FASt 5	**4d** numerical mle [10] numerical mle **11** numerical mle **20** Laplace
			Notes: • You already did 5.4d. This time redo it using `maxLik()`. • For 5.10, your choice of starting point will matter.

PS	Due	Source	Problems
5	Tue 2/13	FASt 5	**23** ₗₐᵤ... **23** lazy Additional problems: **1** The help for the `geyser` data says that "Some nocturnal duration measurements were coded as 2, 3 or 4 minutes, having originally been described as short, medium or long." Redo Example 5.2.3 after removing the eruptions that are exactly 2, 3, or 4 minutes in duration. Does the model fit any better if we remove these values? You can use `filter()` to remove the unwanted values. **2** Redo Example 5.2.3 using a mixture of gamma distributions instead of a mixture of normal distributions. Continue to leave out the observations that are 2, 3, or 4 minutes exactly. How does this model fit compared to the mixture of normals? Hint: What sort of starting values are reasonable?
6	Wed 2/21	FASt 5	**21−22** Laplace **24** less lazy
7	Fri 2/23	FASt 5	**17** information **18** CI **19** invariance