HW1

Watts/Clark

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Problem 1

I have three dice. One is a fair die, one is a slightly unfair die that has a probability of 1/5 of landing on a six, and the other is a completely unfair die that has a probability of 1/3 of landing on a six. I randomly hand you one of the die and you do not roll a six.

What is your parameter space? In other words, what values can p take on if p is the probability you roll a six.

What is the posterior distribution of p assuming equal probability for all values in the parameter space of p?

If you roll the die again and get a six what is the posterior distrubtion of p?

When a coin is spun on its edge, instead of being throw in the air, the proportion of heads is rarely close to 1/3, but is rather 1/3 or 2/3 because of irregularities in the edge that cause th game to favor one side or the other. Draw a graph of what your prior beliefs of the proportion of heads would be. Think about what a model for your prior beliefs could be.

What about if your don't want to use a discrete parameter space, i.e. you want to define a prior distribution for any p value. Would your prior you chose above be ok to use? If not, how could you change your graph to incorporate any prior?