Warm-up # 2
Math 392 – Spring 2020

Name: _____

Suppose that we want to estimate the true proportion of mice that will be cured by our new cancer drug. Unlike in class, however, we think we know a lot how well this drug might work. From reviewing the previous literature of similar drugs, it seems as though we can expect around three quarters of them to recover. Say that your best guess, therefore, is that the true proportion that will be cured is 0.75, with a standard deviation of 0.2. Additionally, you want to model your prior beliefs using a Beta distribution.

In our experiment, we take a random sample of size 10 mice. Assume the number of the 10 mice that recover have a binomial distribution where the true probability of recovering is the unknown quantity in which we're interested. Find the posterior distribution of that quantity.