

1. Recall the globe tossing model from the lecture. Compute and plot the grid approximate posterior distribution for each of the following sets of observations. In each case, assume a uniform prior for p , and use a grid of $n = 30$ points.
 - (a) W, W, W
 - (b) W, W, W, L
 - (c) L, W, W, L, W, W, W
2. Now assume a prior for p that is equal to 0 when $p < 0.5$ and is a positive constant when $p > 0.5$. Again, compute and plot the grid approximate posterior distribution for each of the sets of observations in the problem above.
3. Compute a grid approximate posterior for the globe tossing model using $n = 1000$ points. Use the same flat prior as before. Then, draw 10,000 samples from the posterior and answer the following questions:
 - (a) How much posterior probability lies below $p = 0.2$?
 - (b) How much posterior probability lies below $p = 0.8$?
 - (c) How much posterior probability lies between $p = 0.2$ and $p = 0.8$?
 - (d) 20% of the posterior probability lies below which value of p ?
 - (e) 20% of the posterior probability lies above which value of p ?
4. Suppose the globe tossing data had turned out to be 8 waters in 15 tosses. Construct a posterior distribution, using grid approximation with $n = 1000$ points. Use the same flat prior as before. Then, draw 10,000 samples from the posterior distribution, and compute a 90% credible interval for p . Interpret what this interval means.