

## HW 1

Question: Is the proportion of female births in the population of the placenta previa births - $\theta$ - less than .485, the proportion of female births in the general population? A study in Germany found that of a 980 placenta previa births, 437 were female. Use a Beta(4,5) prior. (use both exact value and Monte Carlo approximation for 3-5 and only exact value for 6)

- 1) What is the posterior distribution of  $\theta$ ?
- 2) Plot the prior, likelihood, and posterior on the same graph
- 3) Get the posterior mean/variance/sd of  $\theta$
- 4) Get the posterior probability that  $\theta$  is less than .485
- 5) Get the 95% credible interval for  $\theta$
- 6) Get the 95% HPD region for  $\theta$
- 7) What is the posterior predictive distribution of a future outcome?