Lab 1 (from Douglas N. VanDerwerken)

- For $n = 30$, $p = .7$, perform 10000 simulations. Each simulation entails:

  1. Draw n random Bernoulli variables, with parameter p.
     (Drawing one binomial(n, p) instead is ok.) (Do not report.)
  2. Find 95% intervals for three methods: frequentist, uniform-prior Bayesian, and Beta$(5, 2)$-prior Bayesian. (Do not report.)
  3. Record the length of each interval. (Do not report.)
  4. Record whether interval captures true p. (Do not report.)

  After 10000 simulations are complete, find the observed coverage and average interval length for each method.

- Repeat for $n = 5$.

Give code for frequentist and uniform Bayes. Report results. Comment on them briefly, especially the difference between Bayesian vs. frequentist at the different values of n.

Whole thing should be able to fit on one page or you're doing something wrong.