STAT 7630: Homework 1
(Due: Thursday, 09/05/2024)

Note: Show all your work for the necessary steps to receive full credit.

Please turn in the HW on paper, hand-written and/or typed. For computational problems, return only the relevant parts of the output with comments/annotations. Questions taken from the textbook are marked with BR for "Bayes Rules!". From the code you are using to answer the problems, turn in the relevant output, and the figures (if requested), preferably printed from the output. No need to turn in your code or long lists of generated samples.

BR Chapter 2:
Do Exercises 2.2, 2.8, 2.9, 2.11, and 2.13.

Additional Questions (AQ):
AQ1. In the 1996 General Social Survey, for males aged 30 and over, the following was true about the respondents:

- 11% of those in the lowest income quantile were college graduates.
- 19% of those in the second income quantile were college graduates.
- 31% of those in the third income quantile were college graduates.
- 53% of those in the highest income quantile were college graduates.

In class, we found $P(Q_1 \mid G)$, the probability that a randomly selected college graduate falls in the lowest income quartile. Also find $P(Q_2 \mid G)$, $P(Q_3 \mid G)$, and $P(Q_4 \mid G)$. Discuss how this distribution compares to the unconditional distribution $\{P(Q_1), P(Q_2), P(Q_3), P(Q_4)\}$.