Homework 1

S520, Fall 2019

Due at the beginning of class, Wednesday September 4th. Please upload your file to Canvas no later than 4pm on the due date. Late submission will be accepted (but penalized) before the solutions are posted.

Trosset question numbers refer to the hardcover textbook. Show all work and include the graphs you are asked to draw. Please give numerical answers where applicable; round to 3 decimal places. Unrounded or inaccurately rounded answers may receive point deductions.

1. Trosset exercise 3.7.1 (Venn diagram and probabilities, 15 points.)
2. Trosset exercise 3.7.5 (four fair dice, 15 points.)
3. Trosset exercise 3.7.6 (dreidl, 15 points.) Note: Parts of this question might be a bit difficult, please think carefully or go to the TA's or the lecturer's office hours for help.
4. In "Lotto," the New Zealand lottery, a draw is held every week. There are forty balls, numbered 1 to 40. Each week, six balls are drawn without replacement — no ball can be drawn twice. One week, all six ball numbers were 20 or below.
   (a) What is the probability that in any given Lotto draw, all six balls will be 20 or below? (3 points)
   (b) Does the low probability you found in (a) show that week's draw was rigged? Explain. (3 points)