M362K (56310), Homework #5

Due: 12:30pm, Thursday, Feb. 24

Instructions: Please show all your work, not only your final answer, in order to receive credit. Please keep answers organized in the same order the problems have been assigned.

Random sampling (2.5)

1. Pitman, p. 127, #2

2. Pitman, p. 128, #3

3. Pitman, p. 128, #5

4. Pitman, p. 128, #6

5. Pitman, p. 128, #8

Random variables (3.1)

6. Pitman, p. 158, #3

7. Pitman, p. 158 #4

8. Pitman, p. 159, #6 (Note: Also give the conditional distribution of Y given $X = x$, for all possible x.)

9. Let X and Y be independent Bernoulli$(1/2)$ r.v.'s, and define

$$Z = \begin{cases} 0 & \text{if } X = Y \\ 1 & \text{if } X \neq Y. \end{cases}$$

Show that X, Y, Z are pairwise independent, but are not independent. (Note: This is identical to a problem we have already done, now stated in the language of random variables!)

Sample midterm #1

Please see class website for problems and solutions.