MTHE/STAT 351 — Fall 2015
Practice Problem Set 5

Chapter, section and problem numbers refer to the 3rd edition of the Ghahramani textbook.

1. (a) Section 4.2, # 1.
   (b) Find and sketch the distribution function of the random variable $X$ defined in the above problem.

2. Section 4.2, # 5.

3. Section 4.2, # 16.

4. Section 4.3, # 11.

5. A gambling book recommends the following strategy for the game of roulette. The gambler should bet $1 on red. If red appears (which has probability $\frac{18}{38}$), then the gambler should take her $1 profit and quit. If the gambler loses this bet (which has probability $\frac{20}{38}$), she should make additional $1 bets on red on each of the next two spins of the wheel and then quit. Let $X$ denote the gambler’s net winnings when she quits.
   
   (a) Find the probability mass function of $X$ and $P(X > 0)$.
   (b) Find $E[X]$.

6. Section 4.4, # 12.