HW4 (EAS 595-Fall 2019)
Due: Nov 5ᵗʰ 2019 at 11:59 PM

Problems from the book:

Section 4.1:   Problem 2, 5, 7

Section 4.2, 4.3, 4.4:   Problem 17, 24, 29

Extra Problems:

1- Let X and Y be independent uniform random variable defined on (0,1). Find the PDF of $Z = X-Y^2$

2- Let X and Y be independent random variable with the following PDF:

$$f_X(x)=\begin{cases} \dfrac{1+x}{2} & -1\leq x\leq 1 \\ 0 & other \end{cases}, f_Y(y)=\begin{cases} \dfrac{1-y}{2} & -1\leq y\leq 1 \\ 0 & other \end{cases}$$

What is the PDF of Z=X+Y?

3- Consider the random variable X in the previous example.
   a. Find the moment generating function for *X*
   b. Use the moment generating function to find the variance of *X*