APPM 3570: Homework Set 11

Not collected

1. Chapter 6 in Ross: Problems 21, 22, 27, 29, 33, 44 ; Theoretical Exercise 7(a)

2. (a) Let $Z = X^2 + Y^2$, where X and Y are two continuous random variables with the joint probability density function $f_{XY}(x, y)$. Determine $f_Z(z)$.
   (b) Given that X and Y are independent normal random variables with zero mean and common variance σ^2, find the distribution of Z.

3. Let $Z = \max(X, Y)$ defined as

$$Z = \max(X, Y) = \begin{cases} X & , X > Y \\ Y & , X \leq Y \end{cases}$$

   Given that X and Y are independent continuous random variables, find the density function $f_Z(z)$.

4. Let $W = \min(X, Y)$ defined as

$$W = \min(X, Y) = \begin{cases} Y & , X > Y \\ X & , X \leq Y \end{cases}$$

   Given that X and Y are independent exponential random variables with common parameter λ, find the distribution of W.