Stat 2605 Tutorial 4

October 18, 2022

1. Suppose X has pdf given by

$$f(x) = \begin{cases} c(2x+1) & 1 \leq x \leq 2 \\ 0 & \text{otherwise} \end{cases}$$

   (a) Find c.

   (b) Find $\mathbf{P}(X > 3/2)$.

   (c) Find $\mathbf{E}(X)$.

   (d) Find $\mathbf{Var}(X)$.

2. Suppose X has pdf given by

$$f(x) = \begin{cases} 3x^2 & 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$$

   Let $Y = X^3 + X$.

   (a) Find the cdf of X.

   (b) Find $\mathbf{E}(Y)$.

3. Suppose X has an exponential distribution with pdf given by

$$f(x) = \begin{cases} 2e^{-2x} & x > 0 \\ 0 & \text{otherwise} \end{cases}$$

   Find $\mathbf{E}(X)$.