

11/07

Worksheet #7

1) Identify which of the following are pdfs:

$$\textcircled{a} f(x) = \begin{cases} e^{-4x}, & x \geq 1 \\ 0, & \text{otherwise} \end{cases} \quad \textcircled{b} g(x) = \begin{cases} \sin(x), & 0 \leq x \leq 3\pi/2 \\ 0, & \text{otherwise} \end{cases} \quad \textcircled{c} h(x) = \begin{cases} 4/x^5, & x \geq 1 \\ 0, & \text{otherwise} \end{cases}$$

2) Identify which of the following are cdfs:

$$\textcircled{a} F(x) = e^x \quad \textcircled{b} G(x) = e^{-x} \quad \textcircled{c} H(x) = \frac{10}{6+4e^{-x}} \quad \textcircled{d} L(x) = 1$$

3) For the positive answers in 1) and 2) express the average as a integral and calculate it if possible.

4) Let X be the number pointing up after throwing a fair dice and Y the number after throwing a loaded dice that has prob. of $\frac{1}{10}$ for 1, 2, 3, 4 and 5 (resp.) and prob. of $\frac{1}{2}$ for 6.

a) Find the pmf of X and Y

b) Find $E(X)$ and $E(Y)$

c) Define Z as the sum of the numbers when throwing both dices at the same time (they behave independently). Find the pmf of Z and $E(Z)$

d) If after picking one dice at random and throwing it a thousand times it was observed that the average of the dice was 3,39, which dice would you guess it was picked?