1) Identify which of the following are pdfs:
   a) $f(x) = \begin{cases} e^{-4x}, & x > 1 \\ 0, & \text{otherwise} \end{cases}$
   b) $g(x) = \begin{cases} \sin(x), & 0 \leq x \leq 3\pi/2 \\ 0, & \text{otherwise} \end{cases}$
   c) $h(x) = \begin{cases} 4/x^5, & x > 1 \\ 0, & \text{otherwise} \end{cases}$

2) Identify which of the following are cdfs:
   a) $F(x) = e^x$
   b) $G(x) = e^{-x}$
   c) $H(x) = \frac{10}{6+4e^{-x}}$
   d) $L(x) = 1$

3) For the positive answers in 1) and 2), express the average as an 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 dice 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 3.89, which dice would you guess it was picked?