機率學小考　2015.05.06

1. Let X be uniform on $[0, 8]$ and $Y = X^{1/3}$. What is the PDF of Y? (hint: **2-step method**)

2. Let
$$X \sim \textbf{uniform}(0, 1),\ Y = -\log(X).$$
What is the PDF of Y? (hint: **conservation of probability**)

3. Two archers shoot at a target. The distance of each shot from the center of the target is uniformly distributed from 0 to 1, independent of the other shot. What is the PDF of the distance of the **winning shot** from the center?

4. The random variables X and Y are independent, and uniformly distributed in the inte $[0, 2]$ and $[0, 1]$ respectively. What is the PDF of the random variable $Z = X + 2Y$?

5. Let X be a Poisson random variable with parameter $\lambda = 3$. What is the associated transform of X?