## Homework 3

- 1. A 14 inch circular pizza has been baked with 20 pieces of barbecued chicken. At a party, you were served with a  $4 \times 4 \times 2$  (in inches) triangular slice. What is the probability that you got at least one piece of chicken? Assume Poisson distribution for a number of chicken pieces per square inch.
- 2. Suppose  $X \sim Unif[0,1]$ . Let event  $C = \{\sin\left(\frac{\pi}{2}X\right) \geq \frac{1}{\sqrt{2}}\}$  and  $D = \{X \text{ is a rational number }\}$ . Find P(C) and P(D).
- 3. Suppose  $X \sim Unif[0, 1]$ . Find the distribution of  $Y = X^k$  for any general positive integer k = 2, 3, 4, ... (not just  $Y = X^2$  as we did in class).
- 4. Suppose  $X \sim Unif[0, 1]$ . Find  $E(\log X)$