

Homework 1

EX 2.3. Y is a random variable that can take any positive integer value. The likelihood of these outcomes is given by the Poisson pdf

$$p(y) = \frac{\lambda^y}{y!} \exp\{-\lambda\}.$$

By using the fact that for a discrete random variable the pdf gives the probabilities of the individual events occurring and that probabilities are additive, (a) compute the probability that $Y \leq 4$ for $\lambda = 5$, i.e. $P(Y \leq 4)$. (b) Using the result of (a) and the fact that one outcome has to happen, compute the probability that $Y > 4$. (Hint, one of the two events, $Y \leq 4$ and $Y > 4$, *has* to happen.)

EX 2.9. Assume that a dataset of N binary values, x_1, \dots, x_N , was sampled from a Bernoulli distribution. Compute the maximum likelihood estimate for the Bernoulli parameter.