Small Exercise 1

- If the maxima of a log-likelihood function $l(\boldsymbol{\theta} | \hat{\mathbf{x}})$ has been found at the value π, then the maxima of the likelihood function $L(\boldsymbol{\theta} | \hat{\mathbf{x}})$ is at the value

$$\sum_{i=1}^{n} \log(f_X(\hat{x}_i | \boldsymbol{\theta}))$$

$$\log \pi$$

$$\pi$$

Small Exercise 2

- Consider having a sample space with only two possible states {0,1}. You choose randomly 5 outcomes out of that sample space and you get {0, 1, 0, 0, 0}. What is the corresponding likelihood function?

$$L(\boldsymbol{\theta} \,|\, 0,1,0,0,0) = \theta^1 (1-\theta)^4$$

$$L(\boldsymbol{\theta} \,|\, \hat{\mathbf{x}}) = \{0,1,0,0,0\}$$

$$L(\boldsymbol{\theta} \,|\, \hat{\mathbf{x}}) = \theta^1 (1-\theta)^4$$

Small Exercise 3

- Which equation(s) correspond(s) to the Method of Moments?

$$f_{X_1 X_2 \ldots X_n}(x_1, x_2, \ldots, x_n; \theta) = \prod_{i=1}^{n} f_X(x_i; \theta)$$

$$m_k = \int x^k f_X(x;\theta)dx = E[X^k] = \frac{1}{n}\sum_{i=1}^{n} x_i^{\,k}$$

$$m_k = \sum_j x_j^{\,k} p(x_j) = E[X^k] = \frac{1}{n}\sum_{i=1}^{n} x_i^{\,k}$$