Estimation Project: Likelihood Function and the ML Estimator

In this project, you are asked to determine the likelihood function for a given probability mass function (PMF). Recall that the PMF is for the discrete random variable.

Do the following.

1. Read Sections 2 to 3.2 of the document on Moodle:
   17 Computer Projects\MLE_tutorial
   (You can quickly read through section 1.)

2. Use the PMF specified in Section 2, determine and plot the likelihood function given observed data y=6 and sample size n=10.

3. Determine and plot the PMF of y with a given w=0.6. What are the differences between the PMF and the associated likelihood function?

   [Hint] For example, you could place the equations of PMF and the associated likelihood function side by side, and see if they have the same form.

4. What is the maximum likelihood (ML) estimate of w for this observed data (y) and sample size (n)?

5. For this estimated value of w, what is the expected value of y for a sample size of n=10? Use this answer to explain why the ML estimate in part 3 is intuitively plausible.

What you needs to turn in: Two to three pages of powerpoint slides that answer parts 2—5.