Pre-class preparation

Please read the following textbook sections from Degroot and Schervish's *Probability and Statistics* (fourth edition) or watch the video, as indicated:

- Textbook:

    - 7.6 up to (i.e. stop at) the "Numerical Computation" section on pg. 428

Objectives

By the end of the day's class, students should be able to do the following:

- State the invariance property of the MLE, both for one-to-one and general functions, and explain why this is a useful property of an estimator.

- State the definition of a consistent sequence of estimators, and prove if a sequence of estimators is consistent or not.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 8:45AM:

1. Suppose $X_1, \ldots, X_n | \theta \overset{\text{iid}}{\sim} \text{Poisson}(\theta)$. Explain how you would use the invariance property of the MLE for θ in order to obtain an MLE for the standard deviation of the Poisson(θ) distribution.

2. Probability review: Suppose $X \sim \text{Poisson}(\theta)$ and let $a > 0$. What upper bound does Chebyshev's inequality give for $\Pr(|X - \theta| \geq a)$?

3. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like would you like some more clarification on?