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:

- Video: `https://expl.ai/ADAXERN`

Objectives

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

- Give the definition of the t-test procedures, including all necessary modeling assumptions.
- State and prove the level and unbiasedness properties of the t-test procedures.
- Specify the p-values and power function for the t-test.

Reflection Questions

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

1. Consider $X_1, \ldots, X_n \overset{\text{iid}}{\sim} N(\mu, \sigma^2)$ where both parameters are unknown. Under what conditions is the test statistic $\frac{\sqrt{n}(\bar{X}-\mu_0)}{s}$ distributed t_{n-1}?
2. Recall that in the video, we derived a testing procedure δ of the hypotheses $H_0 : \mu \leq \mu_0$ versus $H_1 : \mu > \mu_0$. Briefly explain why properties (4) and (5) of the power function of δ are desirable for these hypotheses.
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?