Pre-class preparation

Please watch the following video OR read the following textbook sections from Blitzstein and Hwang's *Introduction to Probability* (second edition):

- Video: Normal distribution
- Textbook: Section 5.4 (stop at Definition 5.4.3)

Objectives

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

- Give the PDF and CDF for a Normal distribution.
- Show that the PDF for a standard Normal random variable is valid, and compute the mean and variance for the standard Normal.
- Express the CDF and PDF for a general Normal random variable in terms of the CDF and PDF for the standard Normal random variable.
- Use the $68-95-99.7$ rule to approximate probabilities of Normally distributed random variables.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 7:45AM:

1. True or False: The function $\phi(t) = \frac{1}{\sqrt{2\pi}} e^{-t^2/2}$ does not have an antiderivative.
2. For $Z \sim N(0,1)$, what is the **median** of Z (i.e. the value m so that $P(Z < m) = \frac{1}{2}$)?
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?