

## 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. **NOTE:** if you are currently in MATH 0223, the video from 7:13-12:50 won't make much sense to you. That's okay; I will remind you to re-visit this part of the video later in the semester.
- 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 some more clarification on?