

## STOR 151, Spring 2024, Homework 11

Reading: course text up to Section 8.2.

Problems for solution:

1. Exercise 7.34, page 284 of course text
2. Blood pressure problem, see below
3. Exercise 8.24, page 326 of course text
4. Exercise 8.42, page 339 of course text

Lengthy answers are not required, but you should be sure to address each part of the question in your answer.

Hand in on gradescope. If uploading as a single pdf file, please “assign” your pages.

Due time and date: 11:59 pm Thursday, April 25, 2024

Blood pressure problem: The distribution of systolic blood pressure in adults has a mean of 128.4 and a standard deviation of 19.6 (source: ScienceDirect.com). A new clinical trial is proposed involving  $n$  participants receiving a new treatment while another  $n$  receive a placebo, the allocation between treatment and placebo being randomized. After the trial is concluded, we will conduct a hypothesis test with two-sided significance level  $\alpha=0.03$  to decide whether to accept the new treatment. What sample size would be required to achieve 86% power when the true effect of the treatment is to reduce systolic blood pressure by 12 points? Assume that blood pressure readings have an approximately normal distribution with standard deviation remaining at 19.6 for both treatment and placebo.