

STAT 467/667 Homework 10  
SPRING 2015

Due in class on Friday April 17. These problems refer to the 4<sup>th</sup> Edition.

1. Chapter 9, No. 9.2.7
2. Chapter 9, No. 9.2.9 (**Stat 467 only**)
3. Chapter 9, No. 9.2.10 (In addition, construct a 95% confidence interval for the difference of the two population means)
4. Chapter 9, No. 9.2.13 (**Stat 667 only**)
5. Chapter 9, No. 9.3.2 (In addition, based on your conclusion, would it be appropriate to test  $H_0 : \mu_x = \mu_y$  using the two-sample  $t$  test? Why or why not?)
6. Chapter 9, No. 9.4.4
7. Suppose that a certain drug A was administered to eight patients selected at random, and after 24 hours, the concentration of the drug in each person was measured (in the appropriate units). Suppose that the concentrations in the eight patients were found to be as follows:

1.23, 1.42, 1.41, 1.62, 1.55, 1.51, 1.60, 1.76

Suppose that a second drug B was administered to six patients selected at random, and the concentration of drug B was measured the same way. The results were as follows:

1.76, 1.41, 1.87, 1.49, 1.67, 1.81

(a) Assuming that all observations have a normal distribution with a common unknown variance, test the following hypotheses at the significance level  $\alpha = 0.05$ : The null hypothesis is that the mean concentration of drug A is the same as the mean concentration of drug B, and the alternative hypothesis is that the mean concentration of drug B is larger than the mean concentration of drug A.

(b) Now suppose the alternative hypothesis is that the mean concentrations of the two drugs are not the same. Find the value  $c$  so that the level  $\alpha = 0.05$  two sided  $t$  test will reject  $H_0$  when  $|T| \geq c$ , where  $T$  is the appropriate test statistic.