## STAT203 Homework #8 – on Chapters 13 and 14

## Due by 10am (at the start of class) on Thursday, 15<sup>th</sup> November

## <u>Directions</u>: Please type up or write up very, very neatly your answers to the following exercises <u>showing all work and calculations</u>.

- A. Exercise 13.24 on p.373. Also, add the following part: "(c) Determine how large a sample size is needed so that the Margin of Error for the 95% conservative CI is one-half the Margin of Error for the 95% conservative CI from part (a)."
- B. Exercise 13.42 on p. 380. Assume for this exercise that we are give that  $\sigma = 3$  hours. The reported value of 20 hours is obviously the sample mean ( $\bar{x}$ ) of the n = 144 batteries. Be very careful with your answering part (a). Also, change part (b) to the 90% CI instead of the 99% CI. Also, add the following part: "(c) Find the sample size needed so that the Margin of Error for the 90% CI in part (b) is no greater than 0.20."
- C. Exercise 13.44 on pp. 381-2. Note that for these data, n = 34,  $\bar{x} = 55.02$ , s = 29.49; use these values in your calculations. Note too that we do not use the reported theoretical value  $\sigma = 100/\sqrt{12}$  here except perhaps to note that our sample SD (29.49) is close to this value.
- D. Exercise 14.4 on p. 388. Also, add the following part: "(b) Use the 99% CI from this problem to test the claim that there is no significant change in the average before and after scores at the 1% significance level clearly writing down the Null and Alternative hypotheses and your conclusion in clear terms."
- E. Exercise 14.24 on p. 400. Also, add the following part: "(c) Give the p-values and give and compare the conclusions for the hypothesis test in part (b) for each of the three approaches (i) conservative approach, (ii) Welch's approach, and (iii) the equal variance approach."