

ENGR 0020

Spring 2019

Quiz 8

March 24, 2019

Time Limit: 10 Minutes

Name (Print): _____

Recitation Section: — (A 9:00-10:50, B 13:00-14:50)

Teaching Assistant: Shaoning Han

This quiz contains 1 page and 1 problem. You can use textbooks, notes and calculators, but *no* discussions. Use the backside of the paper if needed.

1. (10 points) A random sample of 12 shearing pins is taken in a study of the Rockwell hardness of the pin head. Measurements on the Rockwell hardness are made for each of the 12, yielding an average value of 48.50 with a sample standard deviation of 1.5. Assuming the measurements to be normally distributed, construct a 99% confidence interval for the mean Rockwell hardness.

Solution: We have

$$n = 12, \bar{x} = 48.50, s = 1.5.$$

Using t -table, we have $t_{0.005} = 3.105$ with 11 degrees of freedom. A 99% confidence interval for the population mean is

$$48.50 - (3.105)(1.5/\sqrt{12}) < \mu < 48.50 + (3.105)(1.5/\sqrt{12}),$$

or equivalently $47.16 < \mu < 49.84$.