

ENGR 0020  
Spring 2019  
Quiz 7  
February 28, 2019  
Time Limit: 10 Minutes

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

Teaching Assistant: Shaoning Han

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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) If a certain machine makes electrical resistors having a mean resistance of 40 ohms and a standard deviation of 2 ohms, what is the probability that a random sample of 36 of these resistors will have a combined resistance of more than 1458 ohms?

**Solution:** We have

$$n = 36, \mu_{\bar{X}} = 40, \sigma_{\bar{X}} = 2/6 = 1/3, z = (40.5 - 40)/(1/3) = 1.5.$$

So,

$$P\left(\sum_{i=1}^3 6X_i > 1458\right) = P(\bar{X} > 40.5) = P(Z > 1.5) = 1 - 0.9332 = 0.0668.$$