ENGR 0020
Spring 2019
Quiz 9
March 28, 2019
Time Limit: 10 Minutes

Name (Print): _____
Recitation Section: __ (**A** 9:00-10:50, **B** 13:00-14:50)

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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) A random sample of size $n_1 = 25$, taken from a normal population with a standard deviation $\sigma_1 = 5.2$, has a mean $\bar{x}_1 = 81$. A second random sample of size $n_2 = 36$, taken from a different normal population with a standard deviation $\sigma_2 = 3.4$, has a mean $\bar{x}_2 = 76$. Test the hypothesis that $\mu_1 = \mu_2$ against the alternative, $\mu_1 \neq \mu_2$. Quote a P-value in your conclusion.

Solution: The hypotheses are

$$H_0 : \mu_1 = \mu_2$$
$$H_1 : \mu 1 \neq \mu_2$$

Since the variance are known, we obtain

$$z = \frac{81 - 76}{5.2^2/25 + 3.4^2/36} = 4.22.$$

It implies P-value≈ 0. So, we reject H_0 and conclude that $\mu_1 > \mu_2$.