

MATHEMATICS DEPARTMENT
Stat2361 Worksheet#4

•Name.....

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(Q1) Find the critical value(s) in each case below.

- (1) $\alpha = 0.01$, σ known, lower-tailed test.
- (2) $\alpha = 0.10$, σ known, upper-tailed test.
- (3) $\alpha = 0.05$, σ known, two-tailed test.

(Q2) Find the p -value in each case below.

- (1) $\mu_0 = 80$, $\bar{x} = 78.5$, $\sigma = 12$, $n = 100$, lower-tailed test.
- (2) $\mu_0 = 125500$, $\bar{x} = 118000$, $\sigma = 30000$, $n = 40$, two-tailed test.
- (3) $\mu_0 = 14.32$, $\bar{x} = 14.68$, $\sigma = 1.45$, $n = 75$, upper-tailed test.

(Q3) Consider the following hypothesis test.

$$H_0 : \mu \leq 112$$
$$H_a : \mu > 112$$

A sample of 60 provided a mean of 116.40. The population standard deviation is 26.27

- (1) Find the value of the test statistic.
- (2) At 5% significance, what is your conclusion? Use the critical value approach.
- (3) At 10% significance, what is your conclusion? Use the p -value approach.

(Q4) Consider the following hypothesis test.

$$H_0 : \mu \geq 25$$
$$H_a : \mu < 25$$

A sample of size 80 was used. The sample mean was 23. The population standard deviation is 6.5

- (1) Compute the test statistic.
- (2) At $\alpha = 0.01$, what is your conclusion? Use the critical value approach.
- (3) At $\alpha = 0.05$, what is your conclusion? Use the p -value approach

(Q5) Consider the following hypothesis test.

$$H_0 : \mu = 2250$$

$$H_a : \mu \neq 2250$$

A sample of size 100 is used. $\bar{x} = 2400$ and $\sigma = 550$

- (1) Calculate the test statistic.
- (2) At 0.01 significance, what is your conclusion? Use the critical value approach.
- (3) At 0.10 significance, what is your conclusion? Use the p -value approach