Quiz 6 for Statistics 301
Elementary Statistical Methods - Spring 1999
Material Covered: Chapter 12 of Workbook; Chapter 9 of text
For: 16th April

Name (please print): ______________________________________.

last first

Octane ratings from a supplier's pipeline were sampled on 12 consecutive days. Assume the octane ratings follow a normal distribution.

88.6,	86.6,	89.6,	87.6,	88.3,	88.8,
88.9,	87.4,	87.9,	88.0,	88.2,	88.5,

1. [1] Give the p–value that demonstrates whether or not the data supports the

claim the average octane rating is greater than 87.5. ______________.

2. [2] In a second independent sample of 15 octane ratings, we find $\bar{x}_2 = 88.5$, $s_2 = 0.43$. We are interested in testing whether or not the average difference in octane ratings is the same or different at a level of significance of 5%. In particular, the

p–value is (do *not* pool) ______________________________.

3. [2] In a second independent sample of 17 octane ratings, we find $\bar{x}_2 = 87.5$, $s_2 = 0.53$.

The standard error is (pool) ______________________________.

4. [1] We are interested in testing whether or not the percentage of octane ratings between 88.0 and 88.9 (including 88.0 and 88.9) is is less than 60%. The p–value is ______________________________________.

1. Determine the following probability and percentile.

(a) [1] $P(-2.31 < t_{14} < 0.32) = \mathbf{0.60}$

(b) [1] 23rd percentile of t_7 $\mathbf{-0.78}$

2. Octane ratings from a supplier's pipeline were sampled on 12 consecutive days. Assume the octane ratings follow a normal distribution.

88.6,	86.6,	89.6,	87.6,	88.3,	88.8,
88.9,	87.4,	87.9,	88.0,	88.2,	88.5,

(a) [1] The 95% confidence interval for the average octane rating is (87.7, 88.7)

(b) [1] Give the p–value that demonstrates whether or not the data supports the claim the average octane rating is greater than 87.5. p–value $= P(\bar{X} > 87.5) \approx 0.005$

3. A parcel delivery service requires that the standard deviation in fees charged not exceed \$2. In a random sample of 33 deliveries, it was found that $s = \$2.12$.

(a) [1] The statement of the test, in this case, is $H_o : \sigma = 2$ versus $H_a : \sigma < 2$

(b) [1] The observed value of the χ^2 test statistic is $\frac{(n-1)s^2}{\sigma^2} \approx 35.976$