Name: _____ **Quiz 5-A**

Math 345 Elementary Statistics – Crawford **9 May 2018**

Use may use a calculator and the given information sheet(s). Books and other notes (in any form) are not allowed. Round final answers to 3 decimal places. *Show your set-up and work.* Good Luck!

1. (7 pts) Researchers are trying to determine if the mean time between eruptions of Old Faithful Geyser has changed. Using the following summary data from 1995 and 2016, use a significance level of 0.01 to test the claim that mean time between eruptions in 2016 is less than the mean time between eruptions in 1995.
2016: $\bar{x} = 78.82, s = 13.97, n = 17$ and 1995: $\bar{x} = 89.08, s = 9.19, n = 12$. Use the Critical Value Method.

1. *Original* claim in symbolic form:

2. Competing idea (complement) in symbolic form:

3. H_0 :

H_1 :

4. $\alpha =$

5. State which distribution will you use for the test statistic (z, t, or χ^2): [You do not need to give the actual formula.]

6. Observed value of the test statistic and which test you used on your calculator:

Graph showing the critical value(s), critical region, and the observed value of the test statistic:

Critical value(s):

7. Circle one: Reject H_0 Fail to reject H_0

8. Wording of the final conclusion in simple, nontechnical terms, addressing the *original* claim.

2. (8 pts) Let x represent student enrollment (in thousands) on a university campus, and let y represent the number of burglaries in a year on the university campus. A random sample of 8 Universities in California give the following data. (Based on data from *Crime in the United States*, Federal Bureau of Investigation).

Enrollment (in thousands) x	12.5	30.0	24.5	14.3	7.5	27.7	16.2	20.1
Burglaries y	26	73	39	23	15	30	15	25

(a). Construct a scatter plot and sketch it below.

(b). Find the correlation coefficient r.

(c). Find the P-value.

(d). Use a significance level of $\alpha = 0.05$ to determine whether evidence supports the claim of a linear correlation. **Clearly state your conclusion**.

(e). Find the regression equation.

(f). Find the best predicted number of burglaries for a campus with 8000 students (i.e. $x = 8$).