

Name: _____

Math 345 Elementary Statistics – Crawford

Quiz 4-A
18 April 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!

$$\text{normalcdf}(L, R, \mu, \sigma)$$

$$\text{invNorm}(A_L, \mu, \sigma)$$

$$\text{tcdf}(L, R, df)$$

$$\text{invT}(A_L, df)$$

Chapter 7:

$$\hat{p} - E < p < \hat{p} + E \text{ where } E = z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}}$$

$$\frac{(n-1)s^2}{\chi_R^2} < \sigma^2 < \frac{(n-1)s^2}{\chi_L^2}$$

$$\bar{x} - E < \mu < \bar{x} + E \text{ where } E = t_{\alpha/2} \frac{s}{\sqrt{n}}$$

$$\sqrt{\frac{(n-1)s^2}{\chi_R^2}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi_L^2}}$$

Chapter 8: Test Statistics

$$\text{proportion: } z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} \quad \hat{p} = \frac{x}{n}$$

$$\text{mean: } t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

$$\text{standard deviation or variance: } \chi^2 = \frac{(n-1)s^2}{\sigma^2}$$

1. (7 pts) The mean weight of glass discarded in one week by 8 randomly selected households is 3.84 lbs with a standard deviation of 2.46 lbs. Construct a 95% confidence interval for the standard deviation by

(a). Determining the critical values χ_L^2 and χ_R^2 .

[Clearly indicate which one is χ_L^2 and χ_R^2 .]

(b). Then constructing the confidence interval using the appropriate formulas.

2. (8 pts) A survey showed that among 785 randomly selected subjects who completed four years of college, 18.3% smoke (based on data from the American Medical Association). Use a 0.01 significance level to test the claim that the proportion of those who smoke among people with four years of college is less than the 27% for the general population. [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. Formula for the test statistic:

6. Observed value of the test statistic with calculations:

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.