

Page 335. Check sums are for two-place decimal answers.

9.1(3). Find the acceptance and rejection regions for a statistic's **z-scores** as intervals. Write regions in interval form:  $z \in (-\infty, -1.96) \cup (1.96, \infty)$ , or  $z \in [1.65, \infty)$ .

(a) Right-tailed test with  $\alpha = .01$ .  
 Null region:  $z \in (-\infty, 0]$   
 acceptance 8  
 rejection

(b) Two-tailed test with significance level 5% .  
 Null region:  $z \in [0, \infty)$   
 acceptance 16  
 rejection

(c) Left-tailed test at the 1% significance level.  
 Null region  $z \in [0, \infty)$   
 acceptance 8  
 rejection

9.4'(6). A random sample of  $n=35$  observations from a quantitative population produces a mean of  $\bar{x}=2.4$  with std. dev.  $s = .29$  . Suppose your research objective is to show, at the 5% significance level, that the population mean  $\mu$  exceeds 2.3.

(a)(0) State the null hypothesis  $H_0$ : 5  
 State the alternative hypothesis  $H_a$ : 5  
 Give the null region (include the variable)

(b)(1) Find the standard error of  $\bar{x}$ . 13

(c)(2) Find the acceptance region for  $\bar{x}$  (for  $\bar{x}$ , not the z-score). Include the variable.  
 $\bar{x} \in$  13

(d)(1) Give the rejection region for  $\bar{x}$ .

(e)(2) Do the data indicate that  $\mu > 2.3$  at the 5% significance level?  
 Why?

9.8(6). High airline occupancy rates on scheduled flights are essential to corporate profitability. Suppose a scheduled flight must average at least 60% occupancy in order to be profitable. An examination of the occupancy rate for 120 10:00 A.M. flights from Atlanta to Dallas showed a mean occupancy per flight of 58% with a std. dev. of 11%. The significance level is 5%.

(a)(1) If  $\mu$  is the mean occupancy per flight and if the company wishes to determine whether or not this scheduled flight is unprofitable, give the alternative and the null hypothesis. Write percentages to 2 places, e.g. 49.55%

Null hypothesis  $H_0$ :  
 Alternative hypothesis  $H_a$ :  
 Find the null region. 6

(b)(2) Find the acceptance region. 14 or 15  
 2-place decimals.

(c)(1) Give the rejection region (with variable). 14

(c)(2) The occupancy data for the 120 flights seems to suggest that this scheduled flight is unprofitable. Is this evidence significant at the 5% significance level?  
 Why?

9.10'(7). An internet server claims that its users average 13 hours per week. But in a survey of 250 of the users the average user in the survey spent 10.5 hours per week with std. dev. 5.2 . Determine, at the 1% significance level, if actual usage differs from 13 hours per week?

(a)(2) Find the acceptance region (to 2 decimal places). 26

(b)(1) Is the survey data significantly different from the claimed 13 hours per week?  
 Why?  
 We want to know if the data indicates, at the 1% significance level, that the actual usage is less than the claimed 13 hours per week.

(c)(2) Find the acceptance region. 8

(d)(2) Is the survey data significantly less from the claimed 13 hours per week?  
 Why?