

University of Colorado
Department of Civil, Environmental and Architectural Engineering
CVEN 5454 Quantitative Methods

Homework #3

Due March 31st, 2005

Topics: Distributions of sample statistics, confidence interval estimation and hypothesis testing – Chapters 8, 9, 10 and Chapters 5 and 6 of Helsel and Hirsch book

(Interval Estimation)

1. Problem 15, page 193
2. Problem 14, page 216
3. Problem 16, page 216
4. Problem 14, page 228

Verify the results of the above problem from a confidence interval approach.

5. Comment on the evidence available concerning equality of the two population means in problem 4.
6. Problem 8, page 282.

(Hypothesis Testing)

7. Problem 5.5 and 5.6 of Helsel and Hirsch book.
8. Problem 6.4 and 6.5 of Helsel and Hirsch book.
9. Problem 13, page 333

10. Monthly streamflows during the month of May at Lees Ferry on the Colorado River, exhibit a bimodal distribution.

(a) Plot the Q-Q Normal plot and also the same with a Nonparametric PDF.

(b) Compute the seasonal flow (April – July sum). Test the difference in means and variances between the first and second half of this data using the standard t and F tests.

Also, do the same using ‘smooth bootstrap’