The following is the opportunity to make up if you didn’t have enough time to complete the Exam III. Only well presented solutions and answers will get full credit. Each problem is worth 10 points.

1. Describe in your words the following concepts:
   • the probability of a type I error, the probability of a type II error and their roles in hypothesis testing;
   • P-value for decision making in testing hypotheses and how does the use of P-values differ from classic hypothesis testing;
   • power of a test and its use in hypothesis testing.

2. Assume that we want to estimate the mean IQ score for the population of statistics professors. How many statistics professors must be randomly selected for IQ tests if we want 95% confidence that the sample mean is within 2 IQ points of the population mean. (Helpful remark: consider 2 as desired margin of error, the missing standard deviation here can be used as 15 which is used in commonly designed IQ tests)

3. When the student randomly selected 16 new textbooks in the college bookstore, she found that they has prices with a mean of $70.41 and a standard deviation of $19.70. Is there sufficient evidence to warrant rejection of a claim in the college catalog that the mean price of a textbook at this college is less than $75? (Assume that the level of significance is 0.05, or 0.01; if you will use both compare your results, is the conclusion in both cases the same?)