Prince Sultan University
Mathematics Department

STAT 271

First Major Exam

, Term 142

Sunday 28, 2015

Time Allowed:**1: 20** minutes

Student Name: _____

Student ID #: _____ Section #:

Time:

Teacher Dr. Benson

Important Instructions:

1. You may use a scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You may NOT use notes or any textbook.
4. There should be NO talking during the examination.
5. Your exam will be taken immediately if your mobile phone is seen or heard
6. Looking around or making an attempt to cheat will result in your exam being cancelled
7. This examination has 15 problems, some with several parts. Make sure your paper has all these problems.

Problems	Max points	Student's Points
1	10	
2	15	
3	15	
4	15	
5	25	
Total	**80**	**/80 = %**

10 points

1. A federal report indicated that 27% of children ages 2 to 5 years had a good diet-increase over pervious years. How large a sample is needed to estimate the true proportion of children with good diets within 2% with 95% confidence?

15 points

2. Find the 90% confidence interval for the variance and standard deviation for the price in dollars of an adult single-day ski lift ticket. The data represent a selected sample of nationwide ski resorts. Assume the variable is normally distributed.

59	54	53	52	51
39	49	46	49	48

15 points

3. A state executive claims that the average number of acres in western Pennsylvania state parks is less than 2000 acres. A random sample of five parks is selected, and the number of acres is shown. At $\alpha = 0.01$, is there enough evidence to support the claim?

959 1187 493 6249 541

15 points

4. **U**se the *t* table to estimate (find) the *P*-value interval for each test value.

   a. $t = 2.321, \quad n = 15$, right-tailed

   b. $t = 1.945, \quad n = 28$, two-tailed

   c. $t = -1.267, \quad n = 8$, left-tailed

   d. $t = 1.562, \quad n = 17$, two-tailed

   e. $t = 0.665, \quad n = 10$, right-tailed

25 points

5. A motorist claims that the South Boro Police issue an average of 60 speeding tickets per day. These data show the number of speeding tickets issued each day for a period of one month. Assume σ is 13.42.

72	45	36	68	69	71	57	60
83	26	60	72	58	87	48	59
60	56	64	68	42	57	57	
58	63	49	73	75	42	63	

   a. Is there enough evidence to reject the motorist's claim at $\alpha = 0.05$? **Tradition Method**

   b. Find the *P*-value for this test and make a decision.

   c. Find the 90% confidence interval for the population mean.