Math 153 - Quiz 10 Name key

April 30, 2015 Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) A 96% confidence interval estimate for the proportion of business majors at a certain university is (0.188, 0.287). Find the best estimate for the true population proportion and the margin of error.

$\hat{p} = \frac{0.188 + 0.287}{2} = 0.2375$

$E = 0.2375 - 0.188 = 0.0495$

2. (3 points) A sample of 500 nursing applications included 60 from men. Find a 90% confidence interval estimate for the true proportion of men who apply to nursing programs. Write a sentence that gives an interpretation of your result.

1-PropZInt

X = 60

n = 500

C-Level = 0.90

→ (0.0961, 0.1439)

We can be 90% confident that the true proportion of men who apply is between 9.61% and 14.39%.

3. (4 points) A new process has been developed to produce synthetic diamonds. Six synthetic diamonds are randomly selected from a large batch that were produced by the new process. Their weights, in karats, are given below.

0.61, 0.52, 0.48, 0.57, 0.54, 0.46

Find a 95% confidence interval estimate for the population mean weight.

T-Interval

with Data

C-Level = 0.95

→ (0.47138, 0.58862)

$\bar{x} = 0.53$

$S \approx 0.056$

We are 95% confident that the true mean weight is between 0.47 and 0.59 karats.