Pledge:

3/27/2006 MATH171 – Statistical Decision Making Name:_____
Dr. Lunsford Quiz 7 20 Points Total

I. Suppose it is known that the mean number of calories per day consumed by women in the United States who are 19 to 30 years of age is 1791 calories with a standard deviation of 31 calories. You will study a random sample of 100 women in this age range and one of the variables you will collect is number of calories consumed per day. Let $\bar{x}$ be the average number of calories per day consumed by the women in your sample. Please answer the following: (10 points)

(a) Please provide the indicated values: (5 points)
$\mu_{\bar{x}}$ = _____ n = _____ $\sigma_{\bar{x}}$ = _____

(b) How likely is it that you will get a random sample that has a sample mean that is less than 1780? Clearly indicate all calculator input. (3 points)

(c) Would you be surprised if your random sample had a sample mean less than 1780? Why or why not? (2 points)

II. Now suppose the mean number of calories per day consumed by women in the United States who are 19 to 30 years of age, say μ, is not known, but from previous studies, you have good reason to believe that the standard deviation is 31 calories. You collect data from a random sample of 100 women in this age range and compute a sample mean of 1790 calories per day. Please answer the following: (10 points)

(a) Find a 95% confidence interval for the mean number of calories per day consumed by women in the United States who are 19 to 30 years of age. Please show all calculator input. (3 points)

(b) Write a complete English sentence explaining the meaning of the confidence interval you found in part (a)? (3 points)

(c) What is the margin of error for the confidence interval you found in part (a)? (2 point)

(d) Based on your confidence interval in part (a), what do you think is more the more likely version of reality: $\mu = 1791$ or $\mu \neq 1791$ calories per day? Why? (2 points)