MATH 2510 NAME _____
Quiz 7 Section _____

Please make sure to show your work. If you use a function in your calculator to derive the answer, please write what was entered into your calculator and the output of the function that you used.

On my honor, as a University of Colorado at Boulder student, I have neither given nor received unauthorized assistance on this work.

SIGNATURE:_____

1) (1 point) Find the value of z such that 16% of the area under the standard normal distribution lies to the left of z. Round your answer to 3 decimal places.

2) The time that you wait at a red light at an intersection is normally distributed with a mean of 1.4 minutes and standard deviation 0.4 minutes.

a.) (2 points) What is the probability that a single motorist chosen at random wais less than 1 minute at the intersection? Round your answer to 5 decimal places.

b.) (2 points) What is the probability that 14 motorists chosen at random have a mean wait time of less than 1 minute at the intersection? Round your answer to 5 decimal places.

3) It has been reported that coffee drinkers spend on average $15.17 per week on coffee with a standard deviation of $4.12.

a.) (1 point) What does the Central Limit Theorem allow you to conclude? Circle the best response.

(i) The average amount that coffee drinkers spend on coffee per week is normally distributed with a mean of $15.17 and standard deviation 0.412.

(ii) The average amount that coffee drinkers spend on coffee per week is normally distributed with a mean of $15.17 and standard deviation 4.12.

(iii) The average amount that 100 coffee drinkers spend on coffee per week is normally distributed with a mean of $15.17 and standard deviation 0.412.

(iv) The average amount that 100 coffee drinkers spend on coffee per week is normally distributed with a mean of $15.17 and standard deviation 4.12.

b.) (2 points) What is the probability that the average amount spent per week on coffee of 100 random coffee drinkers is between $14 and $16? Round your answer to 5 decimal places.

c.) (2 points) How would your answer from part b.) change if there were only 50 random coffee drinkers, instead of 100? Would your answer increase, decrese, or stay the same? Explain.

1)
–0.994

2)
a.) 1 point for normalcdf and 1 point for the answer 0.15866

b.) 1 point for using $\sigma = 0.4/\sqrt{14}$ and 1 point for the answer of 9E–05

3)
a.) (iii)

b.) 1 point for normalcdf with $\sigma = 0.412$ and 1 point for the answer 0.73743.

c.) 1 point for saying "decrease" and 1 point for a good explanation like "because the bounds of the event contain the mean and the standard deviation will decrease, the probability will also decrease."