MATH 10B with Prof. Stankova
Section #208 ; time: 2-3:30pm
GSI: Ninh DO

Quiz 12

Student:
SID:
Tue 4/16/19

True/False - No explanation needed. (1pt for correct, 0pt - no answer, -1pt - incorrect)

1. The MLE always maximizes the probability the data occur. True/False
2. Formulating the data likelihood, taking its logarithm (log) and setting the derivative of the log likelihood to 0 is always a good method to find the MLE. True/False

Problems - Need justification. No justification means **zero**!

1. (10pts) Over all years, the MATH 10B midterm mean is 50 and the std is 10. This year, the instructor takes a sample of 36 students whose midterm mean is 60. He believes that students of this year are smarter than the average over years. Take the significance level $\alpha = 0.05$.
   (a) Perform the hypothesis test and draw a conclustion, i.e. formulate hypotheses, state one-sided/two-sided test, calculate p-value, draw conclusion.
   Hint: use $\bar{\sigma} = \dfrac{\sigma}{\sqrt{n}}$
   (b) Calculate critical value and find the rejection region.