Quiz 1, ASM1
Time allowed 30 mins

1. ISI received applications from 2975 students for admission into its BSDS program.

   (a) In a simple random sample of 320 of these applications, 218 had a CUET math score that was greater than 150. Give a 95% confidence interval for the proportion of all the applications that have a CUET math score greater than 150.

   (b) We would like to test whether the third quartile of CUET math score of applicants is equal to 175. In the sample of 320 applications, 96 had a CUET math score greater than 175. Is this statistically significant evidence that the third quartile of CUET math score of applicants is not 175 at an $\alpha = 0.05$ level?

2. In kernel density estimation, the kernel is chosen to be non-negative and integrating to one. Why are these conditions necessary? Establish your claim mathematically starting from the definition of the kernel estimator.