

Math 6382 Homework 3
due on 10/27/2016

Show all work. You are welcome to discuss HW with anyone in the class, but submit your own solution. Submit both written answers and R codes.

1. (10 pts each) In the textbook, pages 149-151 number 5.1, 5.3, 5.6, 5.10, 5.13
2. (5 pts for each method) Find an estimate of the following integral, the amount of bias in the estimated value (must be close to zero, why?), the standard error of the estimate, the amount of reduction in the variance, and 95% confidence intervals and put them in a nice table in R

$$\int_2^4 (1 + x^2)e^{-x} dx$$

using Monte Carlo method, antithetic variable, control variate, importance sampling and stratified sampling from 2 sub-intervals and from 4 sub-intervals. Which one is the most efficient method?

Best wishes!