AMSC/CMSC 660   Quiz 4   ,   Fall 2006

Show all work. You may leave arithmetic expressions in any form that a calculator could evaluate. By putting your name on this paper, you agree to abide by the university's code of academic integrity in completing the quiz. Use no books, calculators, cellphones, other electronic devices, communication with others, scratchpaper, etc.

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1. (10) Write MATLAB code using `rand` to generate a random number from the following distribution:

> The probability that the number is 0 is 0.6.
> The probability that the number is 1 is 0.4.

(In other words, if $p(x)$ is the probability density function, then $p(0) = 0.6$ and $p(1) = 0.4$.)

2. (10) Write MATLAB code to compute the volume of the unit sphere $x_1^2 + x_2^2 + x_3^2 \leq 1$ using Monte Carlo integration. (You may use any of our three methods, although I suggest not using importance sampling because it is harder to write down.)