Homework 3: Estimates for the Gaussian CDF

Instructions: Be sure to electronically submit your answer in pdf format. You may work together and discuss the problems with your classmates, but write up your final answers entirely on your own. Since this is just one question, it will count as one half of a homework.

1. In class we generated two Monte Carlo estimates of the Guassian cdf. One method used a change of variables and the other used indicator functions. The change-of-variables approach had higher variance at the tails but lower variance in the middle of the range. The indicator function method showed the exact opposite behavior: lower variance at the tails and higher variance in the middle. Explain why this is the case. (You may argue purely in English, or you may use equations to make your case).