

**Homework number 2, assigned Jan 12, due Jan 19**

1. using the 1D random walk program show that in the limit of a large number of steps the distribution goes over to a gaussian.
2. perform the integral over  $\exp(-x^2)$  with  $x$  ranging from  $-\infty$  to  $+\infty$  without and with importance sampling. Monitor the convergence of the integral with the number of MC points in both cases. Discuss your results.
3. Evaluate the integral of  $x \cdot \exp(-x^2)$  for  $x$  ranging from  $-\infty$  to plus infinity. Evaluate the same integral for  $x$  ranging from  $-10$  to  $+10$ . Discuss your results.