Homework 2: Due Thursday February 16, 2017

1. Solve exercises 8.2, 9.2, 12.1 (without the absolute value, i.e. estimate $P(\max_{1\leq k\leq n} S_k > 2\sqrt{n})$), 12.3, and 12.4 from the textbook.

2. Generate four data sets of 100 iid samples each from the following distributions: exponential(2), normal(6,2) (mean 6, variance 2), Cauchy, and gamma(5,1) (scaling is 1 and shape exponent is 5).

a) For all but Cauchy, plot the pdf from a parameter estimation. Use exponential(θ), normal(μ,σ^2), and Gamma(θ,1).

b) Plot a histogram for each of the data sets, varying the starting point and the smoothing parameter to study their effect.

c) Plot a kernel estimator for each of the data sets, using the kernels: $0.5e^{-|x|}$ and $e^{-x^2/2}/\sqrt{2\pi}$ and the two values 0.5 and 0.1 for the smoothing parameter. (16 plots total)