Physics 301: compute problems
August 20, 2020

Limit of Binomial

Make a histogram (frequency distribution) for the binomial probabilites of getting m outcomes with probability p out of N trials. Take $p = 1/2$ and N=10, then N=100. Fit your histograms to Gaussians. Compare the binomial variance to the Gaussian σ.

Problem 2D Random Walk

Do a set of pseudo-experiments (random numbers) to show that in two dimensions, the **mean distance** traveled $\langle d_{end} \rangle$ after n steps is proportional to $\sqrt{n}$. Take $10 < n < 200$. Make a plot of $\langle d_{end} \rangle$ versus $\sqrt{n}$. Find the proportionality constant.