

# Math 314 May 2008 — Homework 1c

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1. Read [http://www.scipy.org/Tentative\\_NumPy\\_Tutorial](http://www.scipy.org/Tentative_NumPy_Tutorial) and follow along with the examples. (Note that the examples assume that you have done `from numpy import *` before you started.)
2. Using the `random_walks.py` module and the `RandomWalk` object, come up with conjectures on the following topics. In the newest version of this file, you can do `r=RandomWalk(); r.step(1000)` to take 1000 steps all at once without a `for` loop. You may want to do a large number of independent random walks to test your conjectures. Some graphs probably wouldn't hurt either.
  - (a) How does the maximum value scale with the number of steps? (Hint: if `r` is a `RandomWalk` instance, then `r.max()` will give the maximum value seen so far.)
  - (b) How does the minimum value scale with the number of steps? (Hint: as above with `r.min()`.)
  - (c) How likely is an  $n$  step random walk to revisit its starting location? (Hint: try `r[1:]==0`.)
  - (d) What changes if  $p \neq 1/2$ ?