

STAT 496
Homework 2 Problems
due Wed. Sept. 19

4 Problems. Show all work.

Please follow the Lab report directions off the homework web page for R Problems.

Please work in HW Groups!

1. p. 19: 2.1

This problem has no R.

2. p. 19: 2.3

Parts (a) and (b) have no R.

For part (c), you just need to use a small number of time points, $n=5$. You can sketch by hand. You do not need to use R.

3. Simulate a random walk: $Y_t = Y_{t-1} + e_t$ where e_t is a sequence of i.i.d. $N(0, \sigma^2)$ random variables. Calculate the mean of your random walk. Use $n = 100$. Construct a time series plot. Does the time series appear stationary? Repeat several times.

You should simulate 4 time series using 4 different `set.seed()` function values. You can use the 2×2 plotting region for this problem. You should calculate the mean of each of the 4 time series.

This problem is to be done using Sweave in RStudio.

4. Consider the model from class: $Y_t = 0.25 + (\cos \pi t)e_t$ where e_t is a sequence of i.i.d. $N(0, \sigma^2)$ random variables. Simulate the random process and make a time series plot. Use $n = 100$ and a standard deviation of one. Repeat several times. You should simulate 4 time series using 4 different `set.seed()` function values. You can use the 2×2 plotting region for this problem.

This problem is to be done using Sweave in RStudio.