

# Time Series - HW1

due Fri, Jan 30th

HW must be turn in as physical copy. Use software like MS word to combine your answer, R code and plots. If you have any question, email to [nmimoto@uakron.edu](mailto:nmimoto@uakron.edu).

1. Read in data directly onto your R by copy and pasting below code onto your R console.

```
#-----
D1 <- read.csv("http://gozips.uakron.edu/~nmimoto/689/TS-HW1_data01.csv")
D <- D1[,2]  #- extract only second column
plot(D,type="o")
```

- (a) Include plot of  $D1$ , and plot of sample ACF in your write-up.
  - (b) Does time series  $D1$  looks (weakly) stationary? What is the definition of stationarity?
  - (c) Is there any evidence that this time series is iid noise? Support your answer with output from R.
  - (d) Test if the true mean of the series  $D1$  is zero. i.e. test if the sample mean of  $D1$  is significantly different from zero.
2. Load another dataset from class web site by copy and pasting below in R console:

```
#-----
D2 <- read.csv("http://gozips.uakron.edu/~nmimoto/689/TS-HW1_data02.csv")
D <- D2[,2]  #- extract only second column
plot(D,type="o")
```

- (a) Does time series  $D2$  look stationary? why?
- (b) Fit a line to the time series by OLS. Plot the fitted line in red, on top of the original data.
- (c) Plot the residuals, and ACF of residuals. Does residuals look like iid noise?