

**Old Dominion University**  
**Mathematics-Statistics Department**  
**Fall 2011 Semester**  
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**Stat 630 Homework 4**

Due date: October 20

Select 10 of the following problems.

Explain your answers.

1. Problem 2.11
2. Problem 2.12
3. Problem 2.13
4. Problem 3.1
5. Problem 3.2
6. Problem 3.3
7. Problem 3.4
8. Problem 3.5
9. Problem 3.6
10. Problem 4.2
11. Problem 4.4
12. Problem 4.5
13. (a) Show that for  $\theta > 0$ , the spectral density for the MA(1) is decreasing.  
(b) Show that for  $\theta < 0$ , the spectral density for the MA(1) is increasing.  
(c) Show that for  $\phi > 0$ , the spectral density for the AR(1) is decreasing.  
(d) Show that for  $\phi < 0$ , the spectral density for the AR(1) is increasing.
14. The data car sales contains the monthly unit car sales of recreational vehicles in Winnebago, Inc. from November 1966 to February 1972.

- (a) Display and interpret the time series data
- (b) Suggest a transformation of the data, and discuss the fit.
- (c) Plot the difference of the transformed data, and suggest a model for that differenced transformed data.

Let me know if you have any questions.