# Lab Exercise 10: Time Series Analysis with ARIMA

## Step 8

### Question 3 and Question 4

Yes, the graph has a seasonal component to it. It seems every summer/fall the sales plateau and come back down.

### Question 5

The data is not stationary (ie stationary means the mean, the variance, the covariance is the same for all t).

### Question 6

The trend of the data is upwards.

## Step 9

### Question 2

The ACF tail does not tail off, meaning the da ta is non-stationary. Differencing will be needed to make it stationary.

## Step 10

### Question 1

The trend data is no longer visible.

### Question 2

The seasonality is no longer visible.

### Question 3

The trend of the oscilating spikes is increasing amplitude.

## Step 11

### Question 2

Yes, the ACF tails off quickly after differencing.

## Step 12

### Question 3

The coefficient of the AR term is -0.3769 (0.0608 standard error) and of the seasonal AR term is -0.3770 (0.0657 standard error).

### Question 4

The error is 1/6 the size of the coefficient.