MTH 4230 Lab 8 **Answer Sheet**

Due Wed., Apr. 29

1 Part A: Time-Series Analysis

1.1 Lake Huron Elevation Data Set

1. NA
2. ***Don't*** print the time-series, just answer the following question.

   Based on the plot, do you think there's serial correlation in the Lake Huron time series? Explain.

3. Give the following values from on the standard least squares regression analysis:

   The estimate of β_0 is $b_0 =$ _____

   The estimate of β_1 is $b_1 =$ _____

   The estimated standard error of b_1 is $s\{b_1\} =$ _____

   The observed value of the test statistic for the t test of

   $$\begin{aligned} H_0 : \beta_1 &= 0 \\ H_a : \beta_1 &\neq 0 \end{aligned}$$

   is $t =$ _____

   The p-value = _____

   Is the observed b_1 statistically significantly different from zero (Yes/No)? _____

4. NA (***don't*** print the time-series plot).

5. Give the value of the ***Durbin-Watson*** test statistic.

   $D =$ _____

   Using $\alpha = 0.05$, is the serial correlation in the data is statistically significant (Yes/No)? _____

6. Give the estimated value of the ***autocorrelation parameter ρ***.

   Estimate of $\rho =$ _____

   Give the following values from on the ***Cochrane-Orcutt*** regression analysis:

   The estimate of β_0 is $b_0 =$ _____

   The estimate of β_1 is $b_1 =$ _____

   The estimated standard error of b_1 is $s\{b_1\} =$ _____

   The observed value of the test statistic for the t test of

   $$\begin{aligned} H_0 : \beta_1 &= 0 \\ H_a : \beta_1 &\neq 0 \end{aligned}$$

   is $t =$ _____

   The p-value = _____

   Is the observed b_1 statistically significantly different from zero (Yes/No)? _____

   Are the coefficient estimates and p-values different from those of the standard least squares regression analysis from Step 3 (Yes/No)? _____