

Name: _____ Student ID: _____

EE325 Section 1 Take home Quiz 1 (Due date Sept 20, 2022)

Use 4 decimal places for numerical answers

Consumption-Income relationship in the United States, 1960-2005

$$\hat{Y}_t = -299.5913 + 0.7218X_t$$

$$\text{Var}(\hat{\beta}_1) = 827.4195. \quad \text{Var}(\hat{\beta}_2) = 0.0000195$$

$$r^2 = 0.3698 \quad \hat{\sigma}^2 = 73.56689$$

Note: $Y = \text{personal consumption expenditure}$ (Billions of dollars)

$X = \text{GDP}$ (Billions of dollars)

- a) From regression model: $Y_i = \beta_1 + \beta_2 X_i + u_i$, $u_i \sim \text{NIID}(0, \sigma^2)$, find the estimators of β_1 and β_2 with OLS method and explain the meaning of the model.
- b) Find R^2 and explain its meaning.
- c) If $X_i = 10$, estimate the value of \hat{Y}_i and explain its meaning.
- d) Test the hypothesis whether coefficients are different from zero at 0.01 level of significance.
- e) Test the hypothesis whether coefficients are more than from zero at 0.05 level of significance.