STA457H1: Time Series Analysis
Assignment 3 - Question 5 Due data December 2, 2022

Student Name.....ID number.....

Instructions: *Show your answers in details.*

Q5 (2 points):

1. Consider the ARMA$(1,1)$: $z_t = \phi_1 z_{t-1} + w_t + \theta_1 w_{t-1}$, where $\phi_1 = -\theta_1$ and $w_t \sim \text{wn}(0, \sigma_w^2)$. Show that this model is not really an ARMA$(1,1)$, but it is a white noise model ARMA$(0,0)$.

2. Consider the ARMA$(2,1)$: $z_t = -0.3z_{t-1} + 0.18z_{t-2} + w_t + 0.6w_{t-1}$, where $w_t \sim \text{wn}(0, \sigma_w^2)$. Show that this mode is not really an ARMA$(2,1)$, but it is an AR$(1) \equiv$ ARMA$(1,0)$.