Homework Assignment 6

Matthew Tiger

October 6, 2015

Problem 3.1. Determine which of the following ARMA processes are causal and which of them are invertible. (In each case $\{Z_t\}$ denotes white noise.)

a. $X_t + 0.2X_{t-1} - 0.48X_{t-2} = Z_t$

b. $X_t + 1.9X_{t-1} + 0.88X_{t-2} = Z_t + 0.2Z_{t-1} + 0.7Z_{t-2}$

c. $X_t + 0.6X_{t-1} = Z_t + 1.2Z_{t-1}$

d. $X_t + 1.8X_{t-1} + 0.81X_{t-2} = Z_t$

e. $X_t + 1.6X_{t-1} = Z_t + -0.4Z_{t-1} + 0.04Z_{t-2}$

Solution. □

Problem 3.3. For those processes in Problem 3.1 that are causal, compute the first six coefficients $\psi_0, \psi_1, \ldots, \psi_5$ in the causal representation $X_t = \sum_{j=0}^{\infty} \psi_j Z_{t-j}$ of $\{X_t\}$.

Solution. □