ECO606 Problem Set I
Worth 10 points. Deadline: March 2nd, 2019

1. (4 points) Consider a first-order autoregressive process, AR(1):
$$y_t = a_0 + a_1 y_{t=1} + \epsilon_t$$
ϵ_t is a white noise stochastic process.
Derive the MA(1).

2. (6 points) Consider the following Vector Autoregression in structural form:

$$y_t = b_{10} - b_{12}z_t + \gamma_{11}y_{t-1} + \gamma_{12}z_{t-1} + \varepsilon_{yt}$$
$$z_t = b_{20} - b_{22}z_t + \gamma_{21}y_{t-1} + \gamma_{22}z_{t-1} + \varepsilon_{zt}$$

Where ϵ_{yt} and ϵ_{zt} are white noise processes.

a. Explain the differences between reduced form and structural form and show the above VAR in matrix form.

b. Derive the impulse response functions. Discuss the meaning of the impulse response functions.