ECO 318, Winter 2019, HW#1

This is a short assignment designed to help everyone get up to speed on basic linear algebra.

Instructions: Answer all questions. This assignment is due at the start of class on 1/16.

1. Consider the following simple model of output (y_t) and inflation (π_t):

$$\pi_t = .5\pi_{t-1} + .5E_t[\pi_{t+1}] + \frac{1}{3}y_t \tag{1}$$

$$y_t = .95y_{t-1} + 1 \tag{2}$$

1. Solve for the steady state of this model.

2. Assume naive expectations where $E_t[\pi_{t+1}] = \pi_t$. Write the model in matrix form where:

$$\alpha x_t = \beta x_{t-1} + \gamma \tag{3}$$

where x_t is a $2x1$ vector of variables, α and β are $2x2$ matrices, and γ is a $2x1$ vector of constants.

3. Now conduct matrix operations as needed to represent the system as:

$$x_t = \delta x_{t-1} + \kappa \tag{4}$$

4. Obtain the eigenvalues of δ.