Seminar problem week 17

Problem 1

Suppose that the economy can be represented by the following New Keynesian model:

(1.1) $$\pi_t = \beta E_t \pi_{t+1} + \kappa y_t + e_t$$

(1.2) $$y_t = E_t y_{t+1} - \frac{1}{\sigma}(i_t - E_t \pi_{t+1}) + u_t$$

where e_t and u_t are white noise processes.

Suppose that the central bank sets the interest rate according to the following "Taylor rule":

(1.3) $$i_t = \alpha_\pi \pi_t + \alpha_y y_t$$

A. Discuss advantages and disadvantages with simple interest rate rules like (1.3)
B. Solve the model, i.e., write the endogenous variables as functions of the exogenous shocks. (Hint: $E_t \pi_{t+1} = E_t y_{t+1} = 0$ because of no autocorrelation)
C. Suppose that the central bank's loss function is
$$L = \frac{1}{2}[\pi_t^2 + \lambda y_t^2]$$

Derive optimal policy under discretion and compare the solution with the solution in B. Can the central bank achieve optimal policy by using a rule like (1.3)?

Problem 2

Problem 6.1 in Gali's book.