HOMEWORK 7. Due Wednesday March 28.

1. (30% of midterm 2, 2005) Consider the PIH model. Assume that a consumer's income follows the AR(1) process

$$y_t = 0.5y_{t-1} + e_t \quad (*)$$

where e_t is white noise with variance 3.

Assume that the rate of interest is 10 percent and that the consumer have assets $A_t = 110$.
a) Find the *level* of consumption in period t, under the assumption that $y_t = 4$. (Hint: You will need to find $E_t y_{t+k}$.)
b) If $y_{t-1} = 2$ what is $c_t - c_{t-1}$?

2. (20% of some exam) Assume that Hall's PIH-model holds. Assume that the rate o f interest is 10% and that labor-income follows the ARMA-process

$$y_t \;=\; 50 \;+\; 0.8y_{t-1} \;+\; 0.4y_{t-3} \;+\; u_t \;+\; 0.5u_{t-1} \;,$$

where u_t is iid.
a) Give the correct formula for calculating the change in consumption in year t in response to an innovation u_t.
b) Calculate (this time we want the number) the change in consumption in year t in response to a 100$ innovation u_t.

3. (20% of midterm 2, 2004) For Hall's PIH-model:
a) What is meant by Excess Sensitivity of Consumption?
b) What is meant by Excess Smoothness of Consumption?

4. (9% of core-exam 2, 2004) Assume that the PIH holds and that the discount rate is 0.5 (and therefore also the rate of interest is 0.5). [These high values are chosen just to make calculations easier.] Assume that an agent has income in period 0 and in all future periods which satisfies the relation $Y_t = 10 + 1.2^t$.
Find the agent's consumption C_t in all periods.