Homework #2

1) Consider the following consumption problem,

$$\max_{\{c_t\}_0^{\infty}} \sum_{t=0}^{\infty} \beta^t \{\ln c_t\}, \qquad 0 < \beta < 1,$$

subject to $A_{t+1} = R(A_t - c_t), \qquad 1 < R < \beta^{-2}$

$A_0 > 0$ is given.

Let c_t be consumption expenditure at period t, A_t be asset value at period t, and R be a constant rate of return.

(1.1) Write a Bellman's equation for this problem and also its meanings;

(1.2) Find the related first-order conditions;

(1.3) State Euler's equation of this problem and its economic meaning;

(1.4) Derive an optimal consumption policy, $c_t^* = h(A_t)$, for this problem.

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2) A representative consumer has to solve the following problem,

$$\max_{\{c_t\}} \sum_{t=0}^{2} \beta^t \{\ln c_t\}, \qquad 0 < \beta < 1$$

subject to $k_{t+1} = k_t - c_t, \qquad$ given $k_0 > 0$ and $k_3 = 0$

Solve the above problem to get optimal policy rules, c_t for t = 0, 1 and 2 by using Lagrangean method. Discuss, in details, all the implications of this optimal consumption policy.