

**Homework 3**  
**Macroeconomic (EE412)**

1) Consider a consumer problem in the world without uncertainty,

$$\text{Max}_{\{c_t\}_{t=0}^{\infty}} \sum_{t=0}^{\infty} \left\{ \beta^t \left[ \frac{c_t^{1-\theta}}{1-\theta} \right] \right\}, \quad 0 < \theta < 1, \quad 0 < \beta < 1,$$

Subject to

$$A_{t+1} = R_t (A_t - c_t),$$
$$A_0 > 0, \quad \text{and} \quad 1 < R_t < (1/\beta^2) \quad \text{for all } t$$

Where  $R_t$  is the rate of return at the beginning of period t+1, variable  $c_t$  is consumption at period t, and variable  $A_t$  is asset at period t.

- (1.1) Write the Bellman's equation in current value for this problem. State clearly its economic meaning;
- (1.2) Find an optimal consumption policy of a representative consumer in this problem.