

Economics 502 Macroeconomics and Growth Theory
Spring 2010
Homework 3

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Due date: Tuesday, February 23, 2010

1. Consider the following “cake-eating” problem. A consumer has preferences given by

$$\sum_{t=0}^{\infty} \beta^t \ln c_t$$

where $0 < \beta < 1$ and c_t is consumption. The consumer begins period 0 with k_0 units of consumption goods which can be consumed or stored until next period. Consumption goods are nonperishable. The consumer faces the sequence of constraints

$$c_t + k_{t+1} \leq k_t$$

for $t = 0, 1, 2, \dots$

- (a) Guess that the value function takes the form $v(k_t) = A + B \ln k_t$ where A and B are constants and verify that the guess is correct.
- (b) Determine the optimal decision rule for k_{t+1} .
- (c) What paths do c_t and k_t follow over time and how does this depend on the discount factor?
2. Write two true/false questions on the material for the upcoming exam. Include your answer and explanation. It is entirely possible that I would put one of your questions on the exam.