Shirai Seminar Admission Exam (Schedule B) March 30, 2012

Microeconomics

1. Suppose a firm faces a cost function of $C = 8 + 4q + q^2$, so that its marginal cost is $MC = 4 + 2q$ where q is a quantity of goods produced.
   a) What is the firm's fixed cost, F?
   b) What is the formula for the firm's variable cost, VC?
   c) What is the formula for the average cost, AC?
   d) What is the formula for average variable cost, AVC?
   e) On a diagram, draw the AC, AVC, and MC curves.
2. Momotaro considers peaches and nectarines to be perfect substitutes. He spends 5000 yen a month on these fruits. Initially, peaches are 1000 yen a killo and nectarines are 1250 yen a killo. Then, the price of peaches increases to 1500 yen a killo. His income allocated to fruit does not change, however.
   a) How does consumption change when the price of peaches changes?
   b) Show with the aid of a graph how utility changes when the price changes.
   c) How much must his budget increase in order to return to the original utility level?
   d) Derive and graph the demand curve for nectarines.
   e) Derive and graph the Engel curve for nectarines (under the assumption that the price of peaches is 1500 yen a pound).

Macroeconomics

1. Read the first two sections of the article by Gadi Barlevy "The Cost of Business Cycles and the Benefit of Stabilization" *Economic Perspectives*, Federal Reserve Bank of Chicago 1st Q, 2005. Answer questions below.

   (You may download the paper at http://www.chicagofed.org/digital_assets/publications/economic_perspectives/2005/ep_1qtr2005_part3_barlevy.pdf)

   a) What is the conventional wisdom highlighted in the beginning of the second paragraph of the first section. Explain.
   b) Translate the fourth paragraph of the first section.
   c) Summarize the section 2 the original Lucas calculation