1. (2 points) Let $Y$ denote output. $A$ is total factor productivity, $K$ is capital stock and $L$ is labor input. Do the following production functions exhibit constant returns to scale? Explain your reasoning.
   a. $Y = F(K,L) = A(2K + 3L)$
   b. $Y = F(K,L) = AKL$

2. (2 points) Suppose that output of the US economy is driven by the following production: $Y = F(K,L) = AK^{0.5}L^{0.7}$. The US nominal GDP in 2011 is $14$ trillion and the US real GDP in 2011 is $13$ trillion in 2005 constant dollar.
   a. Calculate the inflation rate per annum for the US economy.
   b. Calculate the real labor income and the real capital income of the US.

3. (2 points) Mexico is a small open economy. In other words, Mexico participates in international capital market and international goods market without any influence on the world price of goods and services and the world real interest rate.
   a. Suppose Mexico’s government reduces the consumption tax. Explain effects of this policy on Mexico’s net exports and net capital outflows. Depict an appropriate diagram.
   b. Does your answer depend whether Mexico initially has trade deficit or trade surplus?

4. (4 points) The US, Japan and the Euro area are considered the three large economies that drive the world real interest rate. The US has been receiving capital inflows, while Japan has been a source of capital outflows. One reason for this pattern of capital flows is that Japan’s household saving rate is much higher than American’s household saving rate. However, Japan’s household saving rate is predicted to decline in the future, because the share of retirees in total population in Japan is rising.
   a. How will this event influence the world real interest rate in the future? Illustrate a diagram to explain the equilibrium in the world capital market.
   b. How will this event influence the net capital outflows from Japan?
   c. How will this event influence the net capital inflows to the rest of the world (ROW)?
   d. The US is one of the countries in the ROW. Suppose the US Congress aim to prevent a decline of Japan’s household saving rate from influencing the US economy. What policy would you recommend the Congress?