1. In the cross-section of countries we observe

   a) a positive relation between the rate of saving and the level of GDP per head

   b) a negative relation between the rate of population growth and the level of GDP per head

   Derive and discuss the implications of the Solow growth model for these two relations and say whether it is consistent with them. Would your answer in respect of consistency change if the observed relations were not with level of GDP per head but rather its rate of change?

2. Show that for a Cobb-Douglas production function $Y = K^{\alpha}(AL)^{1-\alpha}$ the share of capital income and labour income is always α and $1 - \alpha$ in the economy.

3. An economy described by the Solow growth model has the following production function:
$$\tilde{y} = \sqrt{\tilde{k}}$$

   a. Solve for the steady state value of $\tilde{y}$ as a function of s, n, g and δ.

   b. A developed country has a saving rate of 28 percent and a population growth rate of 1 percent per year. A less-developed country has a saving rate of 10 percent and a population growth rate of 4 percent per year. In both countries, $g = 0.02$ and $\delta = 0.04$. Find the steady-state value of y for each country.

   c. What policies might the less developed country pursue to raise its level of income?

