HE2002 Macroeconomics II

Tutorial 11

1. **Chapter 11, Q6.**

   Suppose that an economy is characterized by the following production function $Y = 3K^{1/2}N^{1/2}$.

   (a) Derive the steady-state level of output per worker and the steady-state level of capital per worker in terms of the saving rate, s, and the depreciation rate, δ.

   (b) Derive the equation for the steady-state level of consumption per worker in terms of the saving rate, s, and the depreciation rate, δ.

   (c) Suppose that $\delta = 0.02$, compute the steady-state consumption per worker and steady-state output per worker when $s = 0$; $s = 0.1$; $s = 0.2$; $s = 1$. What do you observe?

2. **Chapter 12, Q6**

   Suppose that the economy's production function is $Y = K^{1/2}(AN)^{1/2}$, that the saving rate, s, is equal to 16%, and that the rate of depreciation, δ, is equal to 10%. Suppose further that the number of workers grows at 2% per year and that the rate of technological progress is 4% per year.

   (a) Find the steady-state values of the variables listed in (1) through (5).

      (a) The capital stock per effective worker.
      (b) Output per effective worker.
      (c) The growth rate of output per effective worker.
      (d) The growth rate of output per worker.
      (e) The growth rate of output.

   (b) Suppose that the rate of technological progress doubles to 8% per year. Recompute the answers to part a.

   (c) Now suppose that the rate of technological progress is still equal to 4%, but the number of workers now grows at 6% per year. Recompute the answers to part a. Are people better off in part a or part c? Explain.