



Monmouth
COLLEGE

• Name: _____

• Date: _____

ECON 301 Intermediate Macroeconomics

Quiz #4

Spring 2024

INSTRUCTIONS:

- Please read all questions carefully before you begin answering.
- Answer all questions in the spaces provided on the question sheet.
- This quiz consists of 7 pages, including this one. There are a total of 5 problems with a total of 16 subquestions.
- This is a closed-book quiz. Please remove all materials from the top of the desk and take any necessary items from your bags before the exam begins.
- The estimated recovery rate for this quiz is 50%.

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Problem 1. Definitions**(5 Points Each)**

Select FOUR items on the list of items below, and provide a definition of the items that you chose.

- Constant Returns to Scale
- Effective Labor
- Golden Rule Saving Rate
- Technological Progress
- Gini Coefficient
- Steady State

1.A. Item #1: _____

1.B. Item #2: _____

1.C. Item #3: _____

1.D. Item #4: _____

Problem 2. True / False**(5 Points Each)**

Determine whether the following statements are either TRUE or FALSE. If you deem that the statement is TRUE, there is no need to justify your answer. If you deem that the statement is FALSE, you MUST justify your verdict by providing an explanation.

- 2.A. If an economy's savings rate is increased, its growth rate will increase in the long run.
- 2.B. The accumulation of capital, whether physical or human, will not necessarily result in an increase in the growth rate of the economy over time.
- 2.C. To compare the standards of living between any two countries, information on the US dollar value of real GDP per capita of each country will be sufficient.
- 2.D. It can be harmful to technological progress if intellectual property rights are overly protected.

Problem 3. Short Answers: Evolution of Capital**(10 Points Each)**

Suppose that you are given the following equation that explains the evolution of capital between two periods t and $t + 1$ in an economy with a population of 1:

$$K_{t+1} = (1 - \delta)K_t + I_t$$

3.A. In your own words, interpret the equation that explains the evolution of capital between periods.

3.B. Given that the current capital stock at period t is 500, new investment as of period t is 100, and the rate of depreciation is 10%, calculate the capital for the following period K_{t+1}

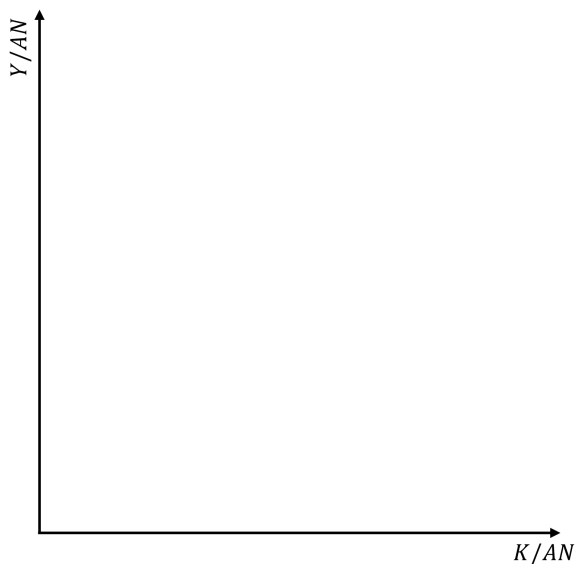
3.C. Has this economy reached its steady-state level of capital? If not, should it be investing more or less to reach the steady state?

Problem 4. Short Answers: Technological Progress and Growth

(10 Points Each)

Consider an economy with technological progress g_A , and population growth g_N , but leaving out human capital H . The other standard assumptions remain, such as the depreciation of capital δ , constant returns to scale of f , and decreasing returns to factors of production.

4.A. Plot and label the graphs for the output, savings, and required investment.



4.B. Suppose that at time t_0 , the saving rate of the economy increased. Plot out how the economy's output (in log scale) will evolve over time:

