worksheet-4-solow-growth

Graphing Questions

1. Solow Model Steady State Graph

Consider an economy with the production function ($Y = K^{0.5}L^{0.5}$), saving rate ($s = 0.2$), depreciation rate ($\delta = 0.05$), and population growth rate ($n = 0$).
Calculate:

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a) The steady-state capital per worker \( k^* \)
b) The steady-state output per worker \( y^* \)
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Draw the Solow model graph showing the steady state equilibrium. Your graph should include:

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- Investment curve ( I = sY = sf(k) )
- Depreciation line ( \delta k )
- Steady state capital per worker ( k^* )
- Label all axes and curves clearly
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2. Effect of Increased Saving Rate

Starting from the initial steady state above, illustrate graphically what happens when the saving rate increases from (s_1) to (s_2). Show:

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- The original steady state ( k_1^* )
- The new investment curve
- The new steady state ( k_2^* )
- Explain the transition path with arrows
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Definition Questions

3. Steady State Definition

Define the steady state in the Solow growth model. Explain what happens to investment, depreciation, and the capital stock at the steady state.

4. Capital Depreciation

What is capital depreciation in the context of the Solow model? Provide two real-world examples of how physical capital depreciates.

Synthesis (Conclusion) Question

1. Germany and Japan Post-WWII

Using the Solow model, explain why Germany and Japan experienced rapid economic growth immediately after World War II, but this growth eventually slowed down. What does this suggest about the nature of economic growth from capital accumulation alone?