Dynamic Model: Practice Problem

Intermediate Macroeconomics
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Question 1  Consider the following dynamic, two period classical model with a capital market:

The Representative Household has preferences over consumption goods \( c_1 \) and \( c_2 \) given by the utility function \( U(c_1, c_2) = c_1 + \beta c_2 \).

The Representative Firm owns a technology represented by the production function \( Y^s = 10K^{\frac{1}{2}} \).

a) Define a competitive equilibrium for this economy. Be sure your definition is written in a precise manner.

b) Assuming \( \beta = \frac{4}{5}, Y_1 = 25, \) and \( Y_2 = 0 \), solve for the competitive equilibrium for this economy.

Question 2  Consider the following dynamic, two period classical model with a capital market:

The Representative Household has preferences over consumption in period 1, \( C_1 \), and consumption in period 2, \( C_2 \), given by the utility function \( U(C_1, C_2) = \ln C_1 + \beta \ln C_2 \).

The Representative Firm owns a technology represented by the production function, \( Y^s = 20K^{1/2} \).

a) Assuming \( Y_1 = 50, Y_2 = 0, \) and \( \beta = 3/4 \), solve for the competitive equilibrium for this economy.