

Long-Run Economic Growth

ECON 3133

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Problems

1.
 - a. The labor supply function is given by $N = 1,000 + 12 \times (W/P)$ and labor demand is $N = 2,000 - 8 \times (W/P)$. Draw a diagram showing these schedules. Find the equilibrium level of employment and the real wage.
 - b. Given existing technology and the capital stock, output is given by the production function $Y = 100 \times N^{1/2}$. Graph the production function. Does the production function exhibit diminishing marginal product of labor?
 - c. Using the labor market from part a and the production function from part b, determine the equilibrium level of output.
2. Suppose that the production function is $Y = A \times K^{1/2} \times N^{1/2}$.
 - a. If capital $K = 900$, labor $N = 400$, and technology $A = 1$, what is output Y and output per worker Y/N ?
 - b. If capital and labor are increased by 50 percent while technology is held constant, how are output Y and output per worker Y/N affected?
 - c. If capital is increased by 50 percent, labor is increased by 25 percent, and technology is held constant, how are output Y and output per worker Y/N affected?
3. Explain the relationship between the following terms: equilibrium employment, the natural rate of unemployment, and potential GDP.
4. Suppose that GDP per capita is \$100 billion in 2000 and \$164 billion in 2025 and the growth rate is constant. What is the balanced growth rate?
5. Consider a Solow growth model where output-to-labor ratio equals $Y/N = (K/N)^{1/2}$, the savings rate equals 4% and the labor force growth rate equals 1%. What is the balanced growth capital-to-labor ratio, $(K/N)^*$?