

EE 320
Introductory Mathematical Economics
Semester 1/2011

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Homework # 3

1. The production function of a cow farm is

$$TP = 10L^{1/2},$$

where TP is the total amount of milk and L is the number of workers.

Currently the farm employs 4 workers and can sell milk for 100 baht per unit. If the wage rate is 150 baht per day, in order to maximize profit, this farm should increase or decrease the number of workers that they employ by how many.

2. The demand function for product A is

$$Q_A = \frac{P_B Y}{P_A^2}$$

where P_A and P_B are the price of product A and B, and Y is consumer's income.

- a. Find every type of demand elasticity.
- b. Is this demand function homogeneous? If yes, to what degree?

3. The macroeconomic models are

$$Y = C + I_0 + G_0$$

$$C = a + bY$$

$$\frac{M_0}{P} = fY - gr$$

The a , b , f and g are the coefficients and greater than zero. Y is GDP; C is aggregate consumption; I_0 is aggregate investment; G_0 is government expenditures; M_0 is money supply; P is general price level; and r is interest rate.

- a) Find equilibrium value of Y and r .
- b) Compute the following multipliers and evaluate their sizes and signs:

$$\frac{\partial Y}{\partial M_0}; \frac{\partial Y}{\partial G_0}; \frac{\partial r}{\partial M_0} \text{ and } \frac{\partial r}{\partial G_0}.$$

$$\frac{\partial Y}{\partial M_0} \quad \frac{\partial Y}{\partial G_0} \quad \frac{\partial r}{\partial M_0} \quad \frac{\partial r}{\partial G_0}$$