Intermediate Microeconomics 301
First Mid-Term
Friday, February 18, 2005

Time: 50 minutes.

Instructions. To obtain credit, you must give arguments to support your answer. The numbers in brackets at the start of each question are the numbers of points the questions are worth.

Exercise 1 [35]: Suppose the supply and demand curves for a good are described by the following equations:

\[ q_s = 10 + \frac{1}{2}p \]
\[ q_d = 100 - 2p \]

where \( p \) is the dollar price of the good.

a. Solve for equilibrium price and quantity. Represent in a graph.

b. Calculate the own price elasticity of demand at the equilibrium price. Is it elastic or inelastic? Give a definition of the elasticity.

c. Imagine that the price of another good goes up and that the two goods are substitutes. The demand becomes

\[ q_d = 100 + a - 2p. \]

Do you think that \( a \) is positive or negative? Determine the new equilibrium.

Exercise 2 [35]: Sofia consumes only goods \( x \) and \( y \) and her utility function is

\[ U(x, y) = xy. \]

The price of good \( x \) is \( p_x \), the price of good \( y \) is \( p_y \) and she has a weekly income of \( m \).

a. What is her optimal consumption bundle?

b. Initial, the price of good \( x \) is $3, the price of good \( y \) is $1 and her income is $60. How much does she consume of good \( y \)?

c. The price of good \( y \) increases to $2. What are the substitution and the income effects? What is the total effect? Is good \( y \) a normal good?

Exercise 3 [30]: Mike considers sushi and hamburgers perfect substitutes. Draw his indifference curves. If the prices of hamburgers and sushi are both $3 and Mike’s income is $30, show his budget constraint and consumption choice(s). If the price of sushi goes up to $5, show Mike’s new point of consumption.