1 Elasticity and Monopoly

Practice Question 1. A statistician estimates the demand for pizzas (Q_1) to be given by:

$$Q_1 = 20 + 0.1m - 2p_1 + 0.5p_2$$

Where m is income, p_1 is the price of pizzas and p_2 is the price of a bucket of fried chicken.

(a) Suppose $m = 200$ and $p_2 = 10$. Find the price elasticity of demand when $p_1 = 10$ and explain this in words. At this price, is the demand for pizza elastic or inelastic?

(b) Suppose $m = 200$ and $p_1 = 10$. Find the cross-price elasticity of demand when $p_2 = 10$, and explain this in words. Is fried-chicken a substitute for pizza?

(c) Suppose $p_1 = 10$ and $p_2 = 10$. Find the income elasticity of demand when $m = 200$, and explain this in words. At this income, is pizza a necessity or a luxury good?

(d) Now fix $m = 200$ and $p_2 = 10$. Suppose Domino's Pizza dominates the whole pizza market, find the MR function. What is the relationship between MR and price elasticity of demand? Verify it when $p_1 = 10$.

Practice Question 2. Consider a monopoly selling a product with the following inverse demand

$$p = 270 - 3Q$$

(a) The monopoly is producing $Q = 50$. Is the following statement **True or False**:"It is not possible to establish whether or not the monopoly is maximizing profits since we do not know the monopoly's cost function".

(b) Determine the price charged by the monopoly if the marginal cost of production is

$$MC(Q) = 3Q$$

(c) Determine the socially optimal outcome.

(d) Determine the deadweight loss of the monopoly.

(e) Determine the impact of a deadweight loss of a per unit tax $t = \$18$ on the monopoly's production.