

EE481 Homework 3: Due Friday 2nd November (submit your home in the class)

Question 1: Suppose the production of 1 tablet requires 1 battery. The marginal cost of 1 battery is 5. The tablet firm's own marginal cost of producing 1 tablet 20. The demand for tablet is given by:

$$Q = 450 - 2P$$

Suppose the battery industry is perfectly competitive and the tablet industry is operated by a monopoly.

- (a) Let the price per 1 battery " P_b ", find the derived demand for battery.
- (b) According to the derived demand in part a), what would be the price of battery? What would be the quantity of battery sold in the market? Find the profit earned by a battery firm.
- (c) What would be the price of a tablet? What would be the quantity of tablet sold in the market? Find the profit earned by the tablet monopoly.
- (d) Suppose the battery industry is now consolidated into two identical firms (a duopoly), while the tablet industry has a new entrant (now a duopoly as well). All firms play a non-cooperative Cournot game. The marginal costs of both the battery and the tablet industry remain the same. Find the derived demand for battery faced by the battery duopoly.
- (e) From the derived demand in part (d), what should be the price and quantity of battery set by the battery duopoly? Find the profit earned by each battery firm.
- (f) Following from part (d) and (e), calculate the market price of tablets, the quantity of tablets produced by each tablet firm. Calculate the profit earned by each tablet firm.

Question 2) For the Toys "R" Us case discussed on page 683-684 in Church and Ware (2000), do you think that the antitrust problem is created more by horizontal agreements or vertical agreements? Explain.

Reference

Church, J. R. and R. Ware (2000). *Industrial Organization: A Strategic Approach*. New York.
Retrieved from https://works.bepress.com/jeffrey_church/23/