

EE481 Homework 1: Due Friday 15<sup>th</sup> February at the beginning of the class (14:00 hr.)

1. (Dominant) Would a profit-maximizing dominant firm ever produce more than if it were a monopoly? (*Hint*: Show the behavior of both monopoly and dominant firm (in the no-entry model) on the same graph and note where the marginal revenue curves cross.
2. (Competition) If the demand curve is given by  $Q(p) = p^\varepsilon$ , what is the elasticity of demand? If the marginal cost is \$1 and  $\varepsilon = -2$ , what is the profit-maximizing price?
3. (Game Theory) **Ericsson vs. Nokia**. Suppose that Ericsson and Nokia are the two primary competitors in the market for 4G handsets. Each firm must decide between two possible price levels: \$100 and \$90. Production cost is \$40 per handset. Firm demand is as follows: if both firms price at \$100, then Nokia sells 500 and Ericsson 800; if both firms price at \$90, then sales are 800 and 900, respectively; if Nokia prices at \$100 and Ericsson at \$90, then Nokia's sales drop to 400, whereas Ericsson's increase to 1,100; finally, if Nokia prices at \$90 and Ericsson at \$100 then Nokia sells 900 and Ericsson 700.
  - (a) Suppose firms choose prices simultaneously. Describe the game and solve it.
  - (b) Suppose that Ericsson has a limited capacity of 800 units per quarter. Moreover, all of the demand unfulfilled by Ericsson is transferred to Nokia. How would the analysis change?
  - (c) Suppose you work for Nokia. Your Chief Intelligence Officer (CIO) is unsure whether Ericsson is capacity constrained or not. How much would you value this piece of info?