EE481 Homework 1: Due Tuesday 4th September 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?

   **The capacity should be 800 units, not 800k!