

Assignment #2  
Due October 18, 2004 – 10:30 a.m.

1. Consider a linear demand curve  $Q = \alpha + \beta P$  with  $\alpha$  positive and  $\beta$  negative.
  - (a) Derive the marginal revenue curve (marginal revenue is the extra revenue a seller receives by increasing the quantity sold by one unit).
  - (b) Compare the slope and intercept of the marginal revenue curve to that of the demand curve.
  - (c) Find the point of maximum revenue for a monopolist setting price with a linear demand curve.
  - (d) Show that the point of unit elasticity (elasticity = 1) occurs at the midpoint of the demand curve between the points of intersection of the demand curve with the horizontal and vertical axis.
  - (e) Show that all points with higher prices than the point at which unit elasticity occurs have elasticity greater than one.
  - (f) If marginal costs are positive, show that a monopolist will always operate at a point of elasticity greater than one (the elastic range).
  - (g) Derive Lerner's rule in the case of linear demand.
  
2. In problem set number 1 you were asked to compare cell phone rate plans and to discuss packaged lettuce or chicken and sources of data for a demand analysis. In this problem set, create a small data set of either cellphone package plans, features and prices and use a "hedonic regression" to relate the cost to the underlying features or estimate a demand model for packaged lettuce or chicken parts. In the former case, you should collect data on features of cell phone plans that you

believe affect the cell phone package price including perhaps: number of free minutes, roaming features, etc. What is the value of “caller id” to consumers? In the lettuce/chicken case you should collect variables that you believe affect demand for packaged lettuce or chicken parts including perhaps price: income, and the price of substitutes. Do you find that regular lettuce or whole chickens are an economic substitute for packaged lettuce or chicken parts?