ECO 601
Problem Set #10
Fall 2003

Due: Friday, December 12

1. Nicholson: 18.4, (a) and (b). (Take a look at (c) but don't turn it in for grading.)

2. As a favor for working in her successful election campaign for city mayor, your sister grants you a monopoly franchise to sell vacuum cleaners in Lexington. Your total cost function is given by $C = 1200 + 0.5Q^2$. Market demand for vacuum cleaners is given by $Q = 300 - P$.
   a) Find the profit-maximizing output and price. What are profits? Illustrate your answer in both a demand-average cost-marginal cost diagram and a total revenue-total cost diagram.
   b) Verify that the inverse-elasticity rule holds for profit-maximizing price you derived above.

3. "Putt" Putnam is a cucumber farmer. Putt hires local graduate students in the late summer to harvest his crop of pickling cucumbers. The more graduate students he hires the more cukes he gets, but the marginal productivity of students declines with the number employed--they talk to each other and sometimes step on cucumbers while they are distracted. Let Q be the pecks of cukes picked, and let L be the number of graduate students employed. The production function is $Q=12L^{.5}$. Putt sells his cucumbers to Peter Piper's Pickle Co., which will buy as many pecks as Putt wants to sell for P dollars each. Assume there are no transportation costs [Peter Piper's purchaser picks up pickles at Putnam's place] and that, at the time of harvest, all other inputs into cucumber production are fixed.
   (a) Suppose P=$5.00. What is Putt's demand for labor?
   (b) Suppose Putt must pay w=$3 for each unit of L employed. Graph Putt's supply curve for cucumbers.

4. Nicholson 21.6

5. Nicholson 21.9