RR
Microeconomics
B.30.3335.01

Exercise Set 1
September 6, 2006
(due September 13)

1. A monopolist has a short-run cost function,

$$C(q) = f + cq^2,$$

where q is the quantity produced per month, and f and c are strictly positive constants. The demand for the product, per month, is

$$D(p) = \max\{a-bp, 0\},$$

where p is the price, and a and b are strictly positive constants.

(a) Derive a formula for the monopolist's optimal price and quantity, as a function of the parameters of the problem. Make explicit any further assumptions you use to complete your model.

(b) Qualitatively, how do the optimal price and quantity depend on c? Draw corresponding schematic graphs to illustrate your conclusions. How do the optimal price and quantity depend on f?

2. In an extension of the model of (Tyagi, 1999), derive formulas for the retailer pass-through corresponding to equation (3) and condition (4), in the case in which the retailer's cost of marketing a quantity q per unit time is

$$C(q) = f + cq + wq,$$

where f and c are strictly positive constants, and w is the wholesale price. Discuss your results. [Hint: this question can be answered without any detailed mathematical calculations.]