

موسسه عالی آموزش و پژوهش مدیریت و برنامه ریزی
دوره کارشناسی ارشد مهندسی سیستمهای اقتصادی-اجتماعی، مزیکی
مجموعه سوال ۵ (انواع انحصار و ابزارهای مقابله با آن)

Problem 1:

12.B.1^A The expression $[p^m - c'(q^m)]/p^m$, where p^m and q^m are the monopolist's price and output level, respectively, is known as the monopolist's *price-cost margin* (or as the *Lerner index of monopoly power*). It measures the distortion of the monopolist's price above its marginal cost as a proportion of its price.

(a) Show the monopolist's price-cost margin is always equal to the inverse of the price elasticity of demand at price p^m .

(b) Also argue that if the monopolist's marginal cost is positive at every output level, then demand must be *elastic* (i.e., the price elasticity of demand is greater than 1) at the monopolist's optimal price.

Problem 2:

12.B.8^B Consider the following two-period model: A firm is a monopolist in a market with an inverse demand function (in each period) of $p(q) = a - bq$. The cost per unit in period 1 is c_1 . In period 2, however, the monopolist has "learned by doing," and so its constant cost per unit of output is $c_2 = c_1 - mq_1$, where q_1 is the monopolist's period 1 output level. Assume $a > c$ and $b > m$. Also assume that the monopolist does not discount future earnings.

(a) What is the monopolist's level of output in each of the periods?

(b) What outcome would be implemented by a benevolent social planner who fully controlled the monopolist? Is there any sense in which the planner's period 1 output is selected so that "price equals marginal cost"?

(c) Given that the monopolist will be selecting the period 2 output level, would the planner like the monopolist to slightly increase the level of period 1 output above that identified in (a)? Can you give any intuition for this?

تمرین ۳: یک بنگاه انحصاری با تابع هزینه و تابع تقاضای زیر رو به رو است:

$$c(y) = y^2 + 10y$$

$$p(y) = 100 - 0.5y$$

الف) سطح قیمت و تولید بهینه و میزان سود این انحصارگر را محاسبه کنید.

ب) موارد بالا را در حالت رقابتی محاسبه نمایید.

ج) اگر دولت تمام سود این بنگاه را به صورت مالیات دریافت کند چه تاثیری بر قیمت و تولید وارد می شود؟

د) اگر دولت مالیاتی را بر هر واحد محصول اعمال کند چه اثری بر قیمت و تولید دارد؟^۱

^۱ برای راهنمایی مساله 12.B.6 را ببینید.

Problem 4: Consider a Bertrand oligopoly. Demand is $D(p) = 100 - p$ and all firms have constant marginal cost. However, firm 1 is more efficient than the other firms such that $c_1 < c_2 = \dots = c_{n-1} < c_n$. What are the Nash equilibrium prices of this game.²

Problem 5:

12.C.9^B Consider a two-firm Cournot model with constant returns to scale but in which firms' costs may differ. Let c_j denote firm j 's cost per unit of output produced, and assume that $c_1 > c_2$. Assume also that the inverse demand function is $p(q) = a - bq$, with $a > c_1$.

(a) Derive the Nash equilibrium of this model. Under what conditions does it involve only one firm producing? Which will this be?

(b) When the equilibrium involves both firms producing, how do equilibrium outputs and profits vary when firm 1's cost changes?

(c) Now consider the general case of J firms. Show that the ratio of industry profits divided by industry revenue in any (pure strategy) Nash equilibrium is exactly H/ϵ , where ϵ is the elasticity of the market demand curve at the equilibrium price and H , the *Herfindahl index of concentration*, is equal to the sum of the firms' squared market shares $\sum_j (q_j^*/Q^*)^2$. (Note: This result depends on the assumption of constant returns to scale.)

Problem 6:

12.C.15^H Derive the Nash equilibrium prices of the linear city model where a consumer's travel cost is quadratic in distance, that is, where the total cost of purchasing from firm j is $p_j + td^2$, where d is the consumer's distance from firm j . Restrict attention to the case in which v is large enough that the possibility of nonpurchase can be ignored.

تمرین ۷: فرض کنید که تابع تقاضای یک بازار انحصاری برابر است با $Q(p) = \frac{\theta-p}{b}$ و تابع عرضه برابر cp است:

- (الف) سطح قیمت و تولید بهینه و رفاه اجتماعی حاصل از آن را محاسبه نمایید.
- (ب) نشان دهید که استفاده از تعرفه دو قسمتی رفاه اجتماعی را افزایش می دهد.
- (ج) بررسی نمایید که انحصارگر هم انگیزه برای استفاده از تعرفه دو قسمتی دارد. به بیان دیگر آیا با استفاده از این تعرفه سود انحصارگر افزایش می یابد؟

تمرین ۸: با نوشتن همه روابط و به صورت دقیق ثابت کنید که رفاه اجتماعی بازی استکلبرگ نسبت به رقابت کورنو بیشتر است. در این مساله فرض کنید که تعریف رفاه اجتماعی برابر است با مطلوبیت مصرف کنندگان + مطلوبیت تولید کنندگان.^۳

^۲ برای راهنمایی مساله 12.C.4 را ببینید.
^۳ برای راهنمایی مساله 12.C.18 را ببینید.