1. A manager derives satisfaction from income and leisure on the job (shirking).
   a. If the manager is paid a fixed salary of $100,000, how much leisure will he or she consume on the job during an eight-hour day? Explain.
   b. When the manager is given a salary of $100,000 plus 10 percent of the firm's profits, she or he chooses to spend six hours managing and two hours consuming leisure. Salary and bonus total $120,000. Does the manager necessarily prefer this situation to the situation in part *a*?

2. The widget industry is comprised of six firms of varying sizes. Firm 1 has 35 percent of the market. Firm 2 has 25 percent, and the remaining firms have 10 percent each. What is the Herfindahl-Hirschman index for the widget industry? Based on the U.S. Department of Justice merger guidelines described in the text, do you think the Justice Department would be likely to block a merger between firms 5 and 6?

3. Suppose you are the manager of Alpha Enterprises - a firm that holds a patent that makes it the exclusive manufacturer of bubble memory chips. Based on the estimates provided by a consultant, you know that the relevant demand and cost functions for bubble memory chips are $Q = 25 - .5P$; $C = 50 + 2Q$.
   a. What is the firm's inverse demand function?
   b. What is the firm's marginal revenue when producing 4 units of output?
   c. What are the levels of output and price when you are maximizing profits?
   d. What will be the level of your profits?

4. The market for widgets consists of two firms that produce identical products. Competition in the market is such that each of the firms independently produces a quantity of output, and these quantities are then sold in the market at a price that is determined by the total amount produced by the two firms. Firm 2 is known to have a cost advantage over Firm 1. A recent study found that the (inverse) market demand curve faced by the two firms is $P = 280 - 2(Q_1 + Q_2)$ and costs are $C_1(Q_1) = 3Q_1$ and $C_2(Q_2) = 2Q_2$.
   a. Determine the marginal revenue for each firm.
   b. Determine the reaction function for each firm.
   c. How much output will each firm produce in equilibrium?
   d. What are the equilibrium profits for each firm?

5. You are considering entering a market serviced by a monopolist. You currently earn $0 economic profits, while the monopolist earns $5. If you enter the market and the monopolist engages in a price war, you will lose $5 and the monopolist will earn $1. If the monopolist doesn't engage in a price war, you will each earn profits of $2.
   a. Write out the extensive form of the above game.
   b. There are two Nash equilibria for the game. What are they?

c. Is there a subgame perfect equilibrium? Explain.
d. If you were the potential entrant, would you enter? Explain why or why not.

6. You are the bargaining coordinator for Sun Car Manufacturers. At present you are renegotiating the labor contract with the union representative. You are bargaining over an expected 20 percent increase in earnings over the next three-year contract period. You are trying to decide whether to offer one-third, one-half, or all of the increase in earnings to the union. The union rules are such that all contracts must be voted on. The additional earnings are contingent on getting started on the new contract next week. If an agreement isn't reached on the first round of negotiations, the firm will go out of business. The union representative tells you that if you do not give the union all of the additional profits, the union members will not vote for the agreement.
   a. Show the extensive form of this game.
   b. What will you offer the union? Why?

7. Two executives were arrested by authorities for embezzling money from their firm. Short of a confession, the prosecutor only had enough evidence to put them away for 10 years. Given a confession, however, she was certain to put them behind bars for life without parole, since they killed a law enforcement officer who was investigating the case. The prosecutor put the two prisoners in separate rooms, and told them the following: "If you confess and your partner does not, I'll give you a year's probated sentence but put your partner in the slammer for life without parole. Of course, if your partner confesses and you don't, you'll get the life sentence without parole and he'll get one year's probation. I must warn you, however, that if you both confess I'll have enough evidence to put you both away for life without parole."
   a. Do you think the prosecutor's bargain will induce the two executives to confess? Explain.
   b. Would your answer change if the life sentence carried the possibility of parole? Explain.