1. *GreenClean.* Suppose that your research indicates the following Cournot reaction functions for quantities of two cleaning products, Clorox Green Works (denoted $q_C$) and Seventh Generation (denoted $q_{7G}$). (Assume there are no other green cleaning products.)

(a) Describe in words the meanings of the points $a$, $b$, $c$, and $d$.

(b) What is special about point $e$?

(c) Suppose the US Department of Justice found that the firms were producing quantities given by point $f$. Could any antitrust action be taken? Explain.

(d) Which of the following HHIs is most plausible if the firms are at point $f$, 1400, 5000, or 8200? Explain.

(e) Suppose that in a Congressional hearing, the CEO of Clorox states that there is substantial competition for Clorox’s green
cleaning products from its own and others’ non-green cleaning products. How does this relate to the “Cellophane fallacy” that “a monopoly creates its own competition?”

2. *Commodity Prices.* Prior to the recession, commodity prices were rising fast, and now it is happening again. *The Economist* (2/26/11, pg. 68) says: “No one will be laughing on April 1st when Whirlpool and Electrolux raise the prices of their washing machines by a whopping 8-10%. The firms want to pass on the higher cost of inputs such as steel, which has risen by 20% in the past year. So far, American manufacturers have had to suck up most of the increase in the prices of their raw materials, with predictable consequences. Whirlpool's profits have disappointed, and its share price has tumbled by nearly a third since April.”

(a) Draw the market diagram for washing machines, with Q = quantity of washers and p = price of washers. Let's first imagine Whirlpool has a monopoly and that they have constant marginal costs equal to 100. Show their monopoly optimal quantity, monopoly price, monopoly operating profit, and the resulting deadweight loss.

(b) Draw a Cournot reaction function diagram for Whirlpool and Electrolux. Label the reaction functions of both firms, and the meaning of both intercepts. Show the Cournot equilibrium. To be more accurate, make it so that Whirlpool ends up producing about twice as much as Electrolux.
(c) Show how an increase in marginal cost to 120 affects both diagrams. For the monopoly diagram, the effect can be seen directly through the marginal cost curve. For the Cournot reaction function diagram, you need to think how the reaction functions would change.

(d) Is it possible that the cost increase could reduce the free-entry number of firms in this market? Presumably the two big firms mentioned above would not be the ones to leave, but smaller, weaker firms might. Show what would happen on a diagram with $N = \text{number of firms}$ on the horizontal axis and $\pi = \text{operating profits}$ on the vertical axis.

3. **Boatshoes.** Suppose that there are four main brands of boat shoes: Sperry Top-Sider, Sebago, Frye, and Eastland. Suppose each brand has yearly operating profits of $150 million, and each brand is currently owned by a separate company. All other shoe companies that make boat shoes currently sell too few to have much impact on the market.

(a) Let the fixed costs of running a major boat shoe brand be $130 million per year, and assume 4 is the free-entry equilibrium number of firms in this industry. Draw a graph of operating profits, fixed costs, and number of firms. Show the relative positions of the operating profits when there are 3, 4, and 5 firms in the industry.

(b) As you know, Sperry and Sebago have just merged. The antitrust authorities decided not to challenge this merger. Write a short essay describing the process and the likely thinking of the antitrust authorities. In your essay, make it clear you understand the following 5 terms: (i) Clayton Antitrust Act, (ii) Hart-Scott-Rodino Act, (iii) diversion ratio, (iv) potential entry, (v) merger-specific efficiencies.
Answers:

1. *GreenClean_a.*

(a) At point \(a\), Seventh Generation’s quantity is so high that Clorox does not produce anything. At point \(b\), Clorox is producing 0 so Seventh Generation optimally responds with the monopoly quantity. We know it must be this way round and not the other because the monopoly quantity is smaller and more restrictive, whereas the quantity that pushes the other firm out of the market is much bigger.

By the same reasoning, point \(d\) is where Clorox drives Seventh Generation’s quantity to 0, and point \(c\) is where Seventh Generation has produced 0 so Clorox responds with the monopoly quantity.

(b) Point \(e\) is the one point which is on both reaction functions as the same time. Each company is doing the best it can given what the other company is doing. No company wants to change quantities. This is called the Cournot equilibrium.

(c) Point \(f\) is not on the reaction functions, it involves smaller-than-Cournot quantities for both firms, and thus probably higher profits. This may be cause for concern. However, this could be the result of *tacit* collusion, which is legal, instead of *explicit* collusion which is illegal. If Clorox is not considered a “monopoly,” and if only tacit collusion is observed, the only antitrust remedy would be to prevent mergers (or to put conditions on them). But with its large market share, it is possible that Clorox will be deemed a monopoly, in which case the tougher remedies under the Sherman Act might come into force. In the most extreme case, Clorox might be split into separate companies.
(d) At point \( f \), the quantity for Clorox is very high while the quantity for Seventh Generation is much lower. This means the market is heavily skewed toward Clorox, and the HHI will be indicative of a near monopoly. This is most consistent with the HHI of 8200.

(e) If Clorox really does have such a huge market share, it is likely that its high prices are forcing marginal consumers to buy non-green cleaners even though they would have wanted green cleaners at lower prices. Thus, the Cellophane fallacy may very well apply: the only reason the non-green cleaners are substitutes is the high prices being charged.

2. No answers yet to CommodityPrices, just a practice problem.

3. **Boatshoes**

   (a) Here the key thing is that 4 firms make $150 million which exceeds fixed costs, but it must be that 5 firms would make less than the fixed costs or else a fifth firm would enter.

   (b) The FTC and DOJ are empowered to review mergers for anticompetitive effects under the Clayton Antitrust Act. The Act requires that merging firms not create an oligopolistic market structure that will hinder an efficient market outcome. The process is formalized through a filing under the Hart-Scott-Rodino Act, which also allow the authorities to follow up with further investigation if necessary. In this case there were no follow-up questions, but even so the HSR filing cost “millions of dollars” in lawyers’ fees according to the CEO of Sperry.

   Using the HSR information and other market data, the authorities determine whether the merger will be anti-competitive. They calculate the diversion ratio, which tells what percent
of Sperry customers would choke Sebago as their next-best choice of shoe if Sperry raised its price. In this merger, the diversion ratio was probably not too high given the many other choices of boat shoes, including smaller brands as well as the big four. The authorities will also consider whether there are other firms that could potentially enter the boat shoe industry if Sperry and Sebago raised prices. They probably concluded that any shoe company could start a boat shoe line without much difficulty, suggesting robust potential for entry.

In their HSR filings, Sperry and Sebago probably listed cost-reducing efficiencies from the merger, suggesting that total welfare might increase after the merger. But these arguments would only be persuasive if these efficiency gains were specific to this merger and not just due to larger size or ongoing technological change. Since the merged brands can combine resources both on the production and sales side, those efficiencies would indeed be merger specific.